John R. McKernan, Jr.
Governor

Robert R. LaBonta
Commissioner

DEPARTMENT OF CONSERVATION

December 9, 1988

Imants Millers
U.S. Forest Service
PO Box 640
Durham, New Hampshire 03824

Dear Imms:

Enclosed please find the "Pest Conditions Information" as requested by USFS-S&PF. The major pest conditions are summarized on the attached forms and maps. A brief overview of 1988 situation and discussion of minor problems has been prepared by Dick Dearborn and is incorporated into the body of this cover letter. We have also enclosed our most recent spruce budworm report, and the first report from our White Pine Blister Rust Study.

Since our last annual report to your office, our State Entomologist position has gone through several changes. Tom Rumpf resigned in early January 1988 to enter the private sector. Henry Trial served as Acting State Entomologist until the appointment of Tom Morrison in early June. Tom left temporarily in October to serve as Acting Director of the Bureau of Public Lands and Dave Struble was appointed to fill his position in an acting capacity until he returned. This shifting has slowed implementation of some of the planned changes associated with our reorganization.

The retirement of Doug Stark in February and the death of George LaBonte in early July resulted in a loss of experienced personnel that will be difficult to replace. Our pathology program was especially hard hit this season with the loss of Doug. With the reassignment of Clark Granger to I&DM in October we are getting the pathology programs back up-to-speed.

Although it seemed to be primarily the hardwood problems that captured the spotlight, we were confronted with a number of serious softwood problems in 1988. While some of our perennial problems such as white pine blister rust and white pine weevil continued to pose a serious threat to the resource, others such as spruce budworm further declined from already low levels. Several of our plantation and Christmas tree pests (larch sawfly, balsam twig aphid, balsam gall midge, spruce budmoth and balsam shoot boring sawfly) seem to be on the rise again. The two softwood problems which seemed to generate the most concern in 1988 were the larch decline/bark beetle and the spruce beetle.

Although a great deal of media attention was given to the pear thrips and hardwood declines, the impact of these problems in Maine was not thought to be serious in 1988. We did have considerable hardwood defoliation beginning in June with various leaf miners and defoliators of birch, poplars and red maple, and continuing with fall webworm in July and a more widespread and severe defoliation complex on sugar maple and beech in August and September. A number of the more common early season hardwood defoliators (Bruce spanworm, cankerworms) were at extremely low levels in 1988. Gypsy moth and saddled prominent populations were at endemic levels across the state.

Moth activity by the spanworms and cankerworms was low in the fall of 1988, indicating possible low populations in 1989. Moth activity of the forest tent caterpillar and hemlock looper seemed to be up in 1988 indicating a possible resurgence of these pests in 1989. Gypsy moth adult populations are still being analyzed.

Drought effects were seen in 1988 especially in mountainous areas and dry sites of western Maine but damage was not nearly as severe as to our west. Rainfall picked up in July which alleviated some of the stress.

If you have any further questions, feel free to give us a call. Happy holidays!

Sincerely,

Dave Struble
Acting State Entomologist
Maine Forest Service

/jlc

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Fall Webworm*

(SPECIFIC NAME): *Hyphantria cunea*

HOST: *Many deciduous hosts*

PRESENT CONDITION: *Locally very heavy populations in 1988.*

AREA - TOTAL ACRES: *?*

LOCATION: *Statewide but heaviest in central and southwestern Maine*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Still primarily an aesthetic problem although feeding and webbing was heav enough and lasted over a long enough period of time to produce some partia

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: *mortality.*

Aestetic damage and possibly some partial bra nch and twig mortality..

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations appeared to be healthy. We could possibly have another heavy season in 1989.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None known to us.

ADDITIONAL COMMENTS:

Populations in 1988 seemed to be healthy but habits seem to be somewhat different: they were much more localized; individual colonies were smaller with less coalescing; and webs were tighter and smaller. The feeding period appeared to be longer than usual with greater variability in larval development evident at any one time.

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Birch Leaf Miner*

(SPECIFIC NAME) *Primarily Messa nana*

HOST: *Betula spp.*

PRESENT CONDITION: *Populations and damage from birch leaf miners (esp. M. nana) was heavy again in 1988 and somewhat more widespread than in 1987.*

AREA - TOTAL ACRES:

LOCATION: *Southern Maine especially west of the Penobscot River,*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Locally moderate to heavy browning.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Static at the high 1987 levels. Possible downward shift expected in 1989.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Balsam Poplar Defoliators*

(SPECIFIC NAME): *Various (See below)*

HOST: *Balsam Poplar*

PRESENT CONDITION: *Severe defoliation from many pests throughout the season and throughout the range of the resource in Maine.*

AREA - TOTAL ACRES: *Thousands of Acres*

LOCATION: *Northern half of the State and in eastern Maine.*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Defoliation from one or more pests exceeded 50 % in nearly every stand and locally exceeded 90 %.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Balsam poplar has not had high value as a crop but may increase in value in time.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Not sure although defoliation by some pests may remain high.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

Pests included:

Leaf Miner - Lyonetia n. sp.
Leaf Miner - Phyllonorycter sp. (?)
Leaf Beetles - ? sp. larvae only
Flea Beetles - Altica sp.
Leaf Tier - Nycteola cinereana

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Hemlock Looper*

(SPECIFIC NAME): *Lambdina fiscellaria*

HOST: *Various softwood and hardwood hosts*

PRESENT CONDITION: *Larvae scatered. No defoliation reported. Moths much more abundant than usual especially in spruce budworm pheromone traps.*

AREA - TOTAL ACRES:

LOCATION: *North Central Maine*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Not sure. Winter surveys will be conducted.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Pine Leaf Adelgid*

(SPECIFIC NAME): *Pineus pinifoliae*

HOST: *White pine and red and black spruce*

PRESENT CONDITION: *Damage to white pine was locally severe in late 1987 and in 1988. Galls are expected on spruce in 1989.*

AREA - TOTAL ACRES:

LOCATION: *Central Maine and locally in eastern Maine*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Infested pine is under great stress in some stands. Another year of high populations could kill some small (less than 30 ft.) trees.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Not sure. The next cycle could be a big one too. Winter surveys on spruce for nymphs and gall checks in the spring of 1989 should indicate direction

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

Some feel that we are in for a series of destructive (to white pine) cycles so we will be watching populations.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Larch Decline/Bark Beetle

(SPECIFIC NAME): Dendroctonus simplex + unknown factors (?)

HOST: Larch

PRESENT CONDITION: An aerial survey of coastal larch stands from Ken. & Linc. Ctys. E. to N.B. Can. was conducted in 1988 (map). This area contains 83 % of the coastal larch type in Me. A 6 % sample of the larch stands in this area was surveyed and rated. The results are shown in Table 1. Samples were also taken from ten plots in stands characteristic to Aroostook Cty. in 1988 (map). The results of these mortality plots are shown in Table 3.

LOCATION: Scattered statewide but more common so far in the southern half of the State.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

On-Ground surveys of the representative larch stands in eastern Aroostook Cty. showed 8 % (range 0-60 %) Dom/Co larch basal area dead. Two-thirds of the dead larch were in a single stand in T9 R5 (map). Larch stands surveyed in SW Maine in 1987 had 17 % mortality.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

This is very serious problem in Maine especially in view of plans to establish extensive plantings of larch statewide.

See preceding sections and Tables.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Based on tren monitoring plots (map), populations are increasing in and near old infestations (Table 2). These plots which monitor within-stand mortality patterns are currently being reviewed. New unrelated spots of beetles/mortality are apparent especially in S. Somerset Cty. and in Aroostook Cty.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Some salvage is being conducted

ADDITIONAL COMMENTS:

The I & DM Div. is still establishing a statewide network of locations to monitor infestations on a multi-year rotation; SW Coastal Me. in 1987; Aroostook Co. in 1988.

Larch Decline/Bark Beetle Survey

MAINE, 1988

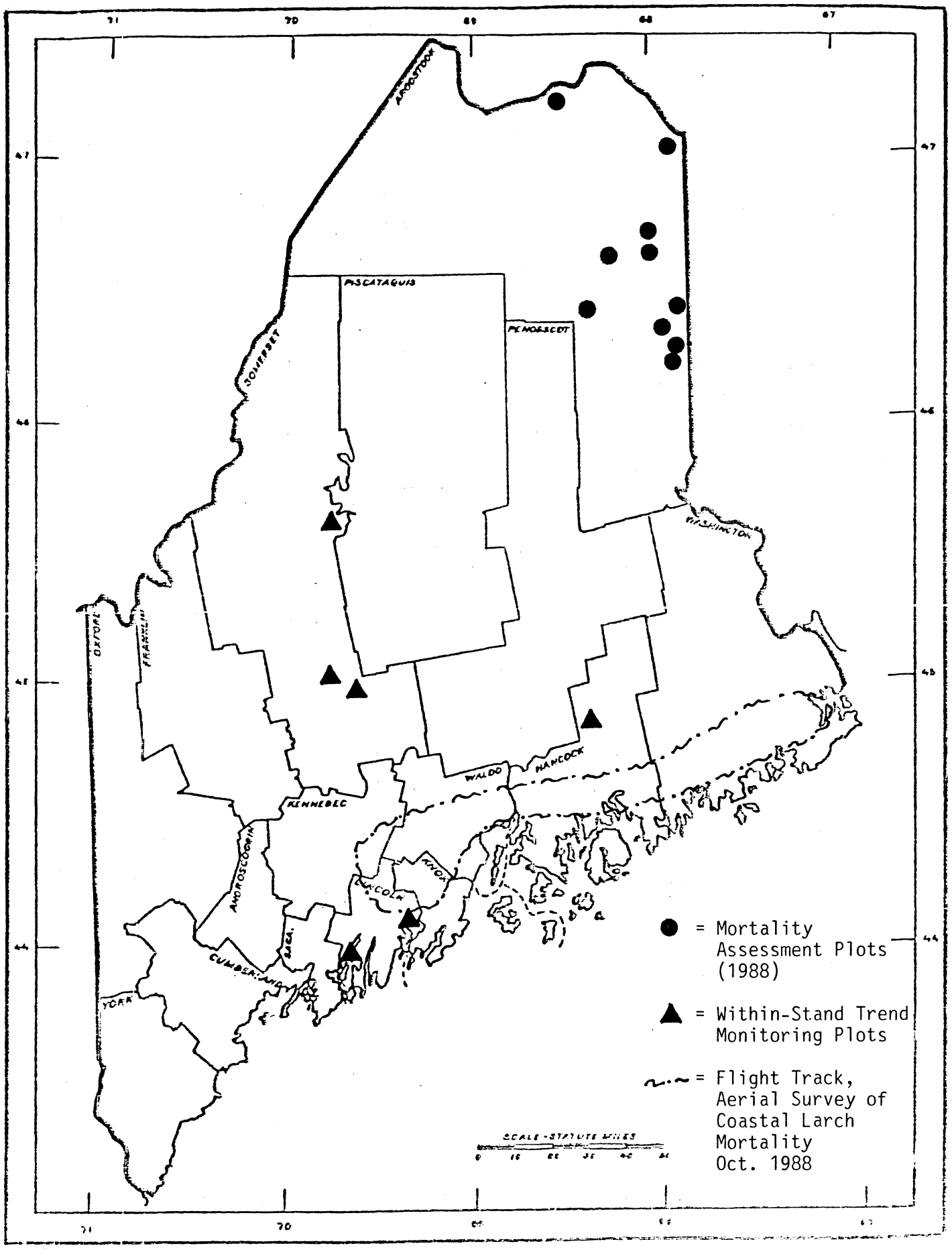


TABLE 1. Larch Mortality Patterns in Coastal Larch Stands East of Kennebec River. From Aerial Overflight Oct 9, 1988.

LOCATION	STAND SIZE	N	PERCENTAGE OF STANDS IN CATEGORY: NO MORTALITY	DEAD INDIVIDUALS	DEAD PATCHES	10-25% STAND DEAD	26-50% STAND DEAD	50+% STAND DEAD
W of Penobscot River	<5 ac	81	30	30	17	14	7	2
	>5 ac	5	40	20	40	0	0	0
	All	86	30	29	19	13	7	2
E of Penobscot River	<5 ac	95	52	31	8	7	2	0
	>5 ac	35	17	51	23	9	0	0
	All	130	42	36	12	8	2	0
TOTAL		216	38	33	15	9	4	1

TABLE 2. Level of Larch Mortality in Established Plots in Maine, by Year, Expressed as a Cumulative Percent.

PLOT LOCATION	1984	1985	1986	1987	1988
Sapling	0	0	2	2	2
Bingham	12	14	30	40	50
Athens	2	2	14	22	26
Amherst	12	14	24	26	28
Waldoboro	28	58	92	92	92
Edgecomb	0	0	8	32	40

TABLE 3 Larch Mortality Survey Plots, Aroostook County Maine, 1988

LOCATION		STOCKING				LARCH CROWN CONDITION DISTRIBUTION (% D/Co Stems)					PERCENT LARCH STEMS wt
Township	Plot #	Total ba/10	Larch ba/10	D/Co ba/10	Larch D/Co ba/10	GOOD	FAIR	POOR	V.POOR	DEAD	D. simplex
T-9R5	1-1	25	20	23	20	0%	40%	0%	10%	50%	60%
	1-2	17	9	12	8	0%	0%	12%	0%	88%	89%
	1-3	17	6	11	5	0%	0%	20%	0%	80%	100%
	1-4	16	7	12	7	0%	14%	29%	14%	43%	86%
	X	18.75	10.5	14.5	10	0%	22%	10%	8%	60%	76%
LITTLETON	2-1	17	17	11	11	0%	100%	0%	0%	0%	0%
	2-2	14	12	10	10	0%	90%	0%	0%	10%	8%
	2-3	14	12	11	11	0%	100%	0%	0%	0%	0%
	2-4	17	14	14	14	0%	100%	0%	0%	0%	0%
	X	15.5	13.75	11.5	11.5	0%	98%	0%	0%	2%	2%
T-CR2	3-1	26	23	22	21	0%	90%	0%	0%	10%	9%
	3-2	17	14	14	13	0%	100%	0%	0%	0%	0%
	3-3	18	16	15	15	0%	93%	7%	0%	0%	0%
	3-4	21	12	19	15	0%	80%	7%	0%	13%	17%
	X	20.5	16.25	17.5	16	0%	91%	3%	0%	6%	6%
B.WATER	4-1	15	12	13	10	0%	100%	0%	0%	0%	0%
	4-2	20	15	17	14	0%	100%	0%	0%	0%	0%
	4-3	16	10	13	10	0%	100%	0%	0%	0%	0%
	4-4	20	16	15	14	0%	93%	0%	7%	0%	6%
	X	17.75	13.25	14.5	12	0%	98%	0%	2%	0%	2%
LITTLETON	5-1	12	11	11	11	0%	100%	0%	0%	0%	0%
	5-2	12	9	12	9	0%	78%	11%	0%	11%	11%
	5-3	15	14	15	14	0%	79%	14%	0%	7%	0%
	5-4	16	15	15	15	0%	100%	0%	0%	0%	0%
	X	13.75	12.25	13.25	12.25	0%	90%	6%	0%	4%	2%
P. ISLE	6-1	15	15	15	15	0%	87%	13%	0%	0%	0%
	6-2	12	11	10	10	0%	80%	0%	0%	20%	0%
	6-3	14	13	12	12	0%	100%	0%	0%	0%	0%
	6-4	13	11	9	9	0%	100%	0%	0%	0%	9%
	X	13.5	12.5	11.5	11.5	0%	91%	4%	0%	4%	2%
T-11R4	7-1	14	12	11	11	0%	100%	0%	0%	0%	0%
	7-2	11	11	9	9	0%	100%	0%	0%	0%	0%
	7-3	19	17	16	15	0%	100%	0%	0%	0%	0%
	7-4	18	16	11	11	0%	91%	0%	0%	9%	0%
	X	15.5	14	11.75	11.5	0%	98%	0%	0%	2%	0%
P. ISLE	8-1	11	11	9	9	0%	100%	0%	0%	0%	0%
	8-2	11	11	10	10	0%	100%	0%	0%	0%	0%
	8-3	13	10	9	9	0%	100%	0%	0%	0%	0%
	8-4	10	10	8	8	0%	100%	0%	0%	0%	0%
	X	11.25	10.5	9	9	0%	100%	0%	0%	0%	0%

1988 Maine

Table 3 cont'd. (Larch Decline/Bark Beetle)

CASWELL	9-1	7	7	7	7	0%	100%	0%	0%	0%	0%
	9-2	13	8	11	8	0%	100%	0%	0%	0%	0%
	9-3	10	7	8	6	0%	100%	0%	0%	0%	0%
	9-4	7	4	6	4	0%	100%	0%	0%	0%	0%
	X	9.25	6.5	8	6.25	0%	100%	0%	0%	0%	0%
FT. KENT	10-1	9	9	8	8	0%	100%	0%	0%	0%	0%
	10-2	12	11	10	10	0%	100%	0%	0%	0%	0%
	10-3	13	13	11	11	0%	100%	0%	0%	0%	0%
	10-4	12	9	9	8	0%	100%	0%	0%	0%	0%
	X	11.5	10.5	9.5	9.25	0%	100%	0%	0%	0%	0%
Overall Average											
Basal Area (sq.ft)		147.25	120.00	121.00	109.25						
Percent D/Co Stems						0%	89%	3%	1%	8%	8%

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): Spruce Budmoth

(SPECIFIC NAME): Zeiraphera canadensis

HOST: White spruce

PRESENT CONDITION:

AREA - TOTAL ACRES: 1000 + Acres of moderate to severe populations.

LOCATION: Primarily eastern and northern Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Present in most white spruce plantations checked and severe in roughly 20 % of these. In a number of the more severe cases growth loss and bole deformation was evident.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: It is estimated that several hundred acres of the more severely infested plantations in eastern and northern Maine will require intensive work soon in order to salvage them.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Populations are expected to increase in many plantations as the trees increase in size and number of years on site.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None conducted or planned although recommendations for private test projects may be made.

ADDITIONAL COMMENTS:

Pheromone tests were conducted in 1988 with poor results. Another effort may be made in 1989.

Coordinate with spruce budmoth control efforts an attempt to control two other serious problems affecting white spruce in Maine; gall aphids, and twig gall midge, should also be addressed.

1988 FOREST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): White Pine Weevil

(SPECIFIC NAME): Pissodes strobi

HOSTS: White, Scotch, and Jack Pines and Norway and Colorado Blue Spruce

PRESENT CONDITION:

AREA - TOTAL ACRES: Statewide

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: This is the most serious insect pest of white pine in Maine. It is estimated that more than 25 % of plantation white pine throughout the State may show weevilling damage.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: Although volume loss is thought to be significant it is loss in grade due to deformation of the stem that may be the most serious result . No figures are available.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: The incidence of this pest has been high nearly every year and is expected to remain so in the years ahead.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: 1,000 acres treated by the private sector using Metasystox R, lindane and methoxychlor

ADDITIONAL COMMENTS: Insecticide efficacy trials are planned for 1989.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Balsam Gall Midge

(SPECIFIC NAME): Paradiplosis tumifex

HOST: Balsam Fir

PRESENT CONDITION:

AREA - TOTAL ACRES: unknown

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Scattered spot infestations confined to several trees per area of severe damage 1-3 galls per needle. Some locally heavier populations were reported in 1988

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Figures are not available.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

There has been a strong upward trend. 1989 levels are expected to require numerous control projects within Christmas tree plantations.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None reported in 1988. Locally heavy populations may necessitate control by some growers in 1989

ADDITIONAL COMMENTS:

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Balsam Twig Aphid

(SPECIFIC NAME): Mindarus abietinus

HOST: Balsam Fir

PRESENT CONDITION:

AREA - TOTAL ACRES: Undetermined

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Moderate damage has been observed in 4 plantations in Central Maine >10% of lower crown with needle curl.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Figures are not available

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations are cyclic within plantations but cycles are asynchronous statewide. 1989 is expected to exhibit increased populations of this pest and the associated damage.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None by MFS
>200 acres were treated by private sector - diazinon is the primary chemical used costs can't be determined.

ADDITIONAL COMMENTS:

annual problem

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pine - Pine Gall Rust

(SPECIFIC NAME): Endocronartium harknessii

HOST: Scots Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: ?

LOCATION: T19 MD

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Light

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Some branch mortality light

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Increasing from previous sanitation work

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Area was to be biomassed in 1988

ADDITIONAL COMMENTS:

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): SPRUCE BUDWORM

(SPECIFIC NAME): CHORISTONEURA FUMIFERANA (Clem.)

HOST: Balsam Fir, Red Spruce, White Spruce, Black Spruce, Hemlock

PRESENT CONDITION: The spruce budworm infestation in Maine remained at a very low level in 1988.

AREA - TOTAL ACRES: The defoliated area is estimated at 55,000 acres of moderate to severe and 10,000 acres of light.

LOCATION: Budworm defoliation was restricted to Southeastern Maine in southern Hancock and Washington Counties.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Moderate to severe (30% or more current Def.) = 55,000 acres

Light (less than 30% Def.) = 10,000 acres

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Spotty tree mortality is still occurring in the southeast and in some other areas heavily damaged by the recent outbreak. However, most of this new mortality appears secondary in nature due to other agents.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

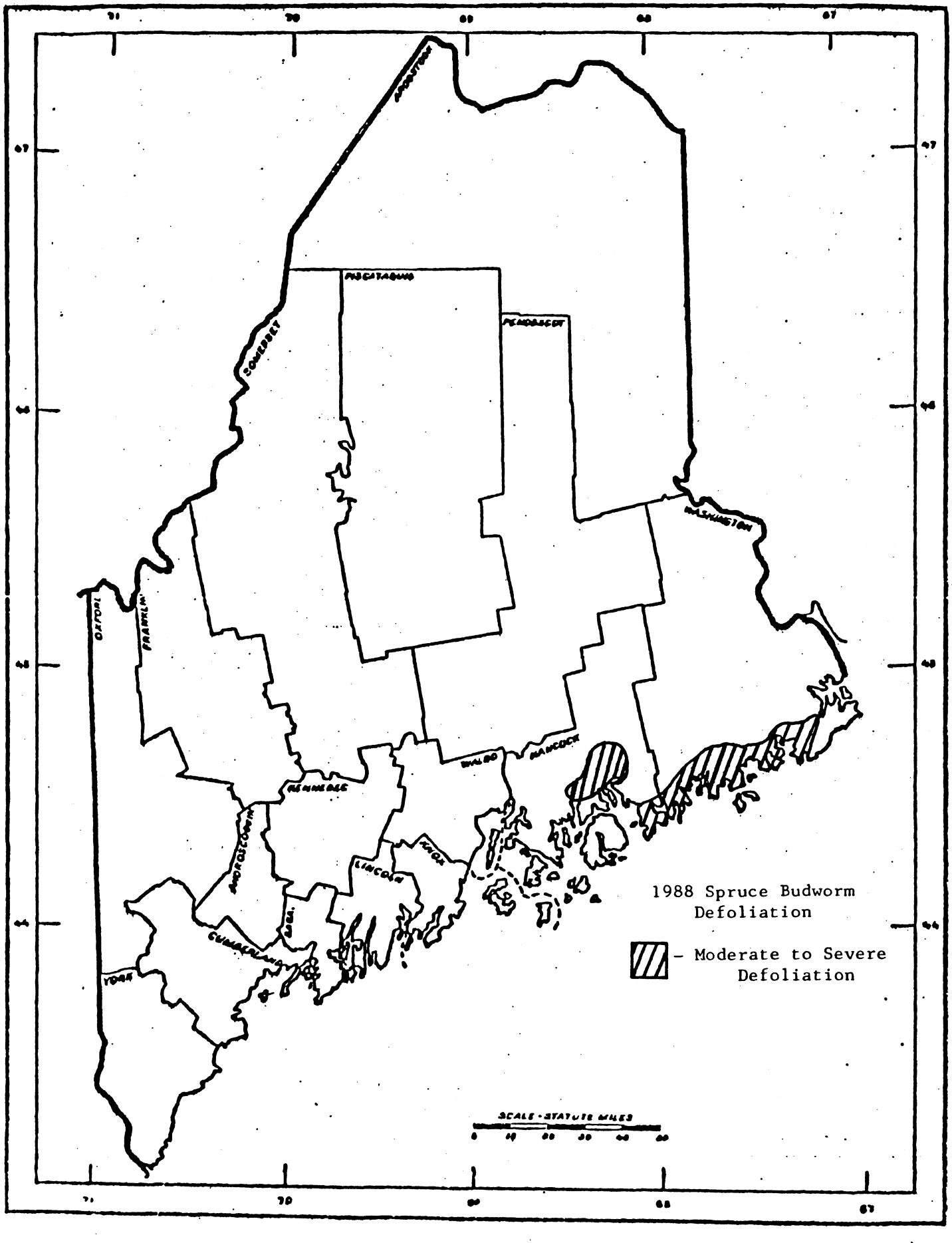
The trend since 1985 has been a sharp decline. Currently the decline is less apparent but the size and intensity of the infestation continues to decrease.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None planned

ADDITIONAL COMMENTS: An extensive assessment of moth activity using pheromone traps yeilded no budworm in the north, west, and central areas. Very few moths were caught in the southeast, even in defoliated areas.

MAINE


AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
LINCOLN
SAG.
CUMBERLAND
YORK
1988 Spruce Budworm Defoliation
- Moderate to Severe Defoliation
SCALE - STATUTE MILES

THE STATUS OF THE SPRUCE BUDWORM IN MAINE - 1988 AND FORECAST - 1989

HENRY TRIAL, JR. - MAINE FOREST SERVICE

The spruce budworm infestation in Maine remained at a very low level in 1988. The Insect and Disease Management staff of the Maine Forest Service looked for areas on budworm activity throughout the State as part of the normal Forest Insect Survey. The only populations found were in the Southeast (Hancock and Washington Counties), as had been the case in 1987. An aerial survey conducted in July confirmed the larval findings. The area containing light, moderate, or severe defoliation is shown in Figure 1. Within this area, the MFS estimates there is 55,000 acres of moderate to severe defoliation and an additional 10,000 acres had light damage. Damage throughout the mapped area was extremely spotty.

A pheromone moth trapping survey was conducted throughout the spruce-fir region of the State with approximately 250 locations trapped. The effectiveness of this survey is in doubt because high numbers of moths were not trapped in heavily defoliated areas, even though much moth activity was observed near the traps. Moth counts are not complete, but no moths were caught in the North, West, or Central portions of the survey area. Many traps in Hancock and Washington Counties caught moths, but count were very low.

Scattered spruce mortality continues to occur in heavily defoliated portions of Hancock and Washington Counties. Losses directly attributable to budworm defoliation have ceased in Northern, Western, and Central Maine, however, losses due to secondary or associated factors such as spruce beetle and Stillwell's Syndrome continue.

Based on 1988 defoliation and pheromone trap catches the MFS predicts low population again in 1989. Defoliation in 1989 should be confined to the southeast and should be of similar magnitude to the 1988 area. A significant reduction in area or intensity would not be surprising in view of the steady decline of budworm in Maine.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Christmas tree pests (not included elsewhere)

(SPECIFIC NAME): Undetermined Lepidoptera

HOST: Balsam fir

PRESENT CONDITION:

AREA - TOTAL ACRES: >45 acres

LOCATION: central and southern Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Moderate damage to leaders feeding on bark

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

0

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Unknown

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

Research project is planned for 1989 to determine 1) pest 2) importance of damage.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): STILLWELL'S SYNDROME

(SPECIFIC NAME):

HOST: Balsam Fir

PRESENT CONDITION: More red fir were noted in 1988 than had been seen in 1987, but occurrance seemed reduced from 1984-86 levels.

AREA - TOTAL ACRES: Scattered throughout the spruce-fir type damaged during the recent budworm outbreak.

LOCATION: Northern and Central Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Scattered individual dead trees probably less than 1% of fir affected in most areas.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Losses continue predominantly in areas where budworm killed large numbers of fir.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

1988 occurrance up from 1987, but still less than 1984-86. There is no way to predict 1989 levels, but some level of occurrence of Stillwell's is expected to continue for several years.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS: Red-topped fir has also been noted throughout the spruce-fir type in 1988. Many of the trees checked showed attacks by the Balsam fir sawyer, Monachamus marmorator. As in the past, all Stillwell's trees examined were found to have Armillaria mellea infection.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Scleroderris Canker

(SPECIFIC NAME): Ascocalyx abietina

HOST: Red Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 5 acres

LOCATION: T 19 MD

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Light damage

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

No loss

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Scattered infections no mortality

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

5 acres were sanitized by low branch pruning

ADDITIONAL COMMENTS:

Due to the retirement of Doug Stark and the lack of a pathologist during the 1988 season there were no specific scleroderris surveys. This summary may not, therefore, reflect the actual status of this disease in 1988.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Saratoga Spittlebug

(SPECIFIC NAME): Aphrophora saratogensis

HOST: Red pine

PRESENT CONDITION:

AREA - TOTAL ACRES: undetermined

LOCATION: Eastern Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

15 acres of severe deformation and mortality in T19 MD
15 acres of moderate deformation with spots of past mortality in T25 MD

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Undetermined

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations appear stable

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

15 acres in T19 MD will be destroyed and replanted to alternative species.

ADDITIONAL COMMENTS:

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): White Pine Blister Rust

(SPECIFIC NAME): Cronartium ribicola

HOST: E. White Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: Statewide

LOCATION: Southern 1/2 of the state

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

3.8% loss in control area
9.1% loss in noncontrol areas

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Annual loss in range of $ 60,000 - 100,000

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Static

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

137 acres intense control Tordon RTU $3,500.00
32,084 acres incidental control Tordon RTU $30,000.00

ADDITIONAL COMMENTS:

The first phase of the I & DM blister rust evaluation study has been summarized and published (copy attached). The associated economic evaluation has been completed and should be available in 1989. Plans are underway to modify the present program incorporating ideas gleaned from these studies and associated input.

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): Pinewood Nematode

(SPECIFIC NAME): Bursaphelenchus xylophilus

HOST: Confirmed only from eastern white pine previous to 1988. Found and confirmed on Balsam Fir at 2 locations in 1988.

PRESENT CONDITION: Total extent unknown at this time.

AREA - TOTAL ACRES: Unknown at this time

LOCATION: Positive findings from Baldwin, Casco, Whitefield and Albion on White pine and Medway and T11-R17 WELS on Balsam Fir.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

None

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

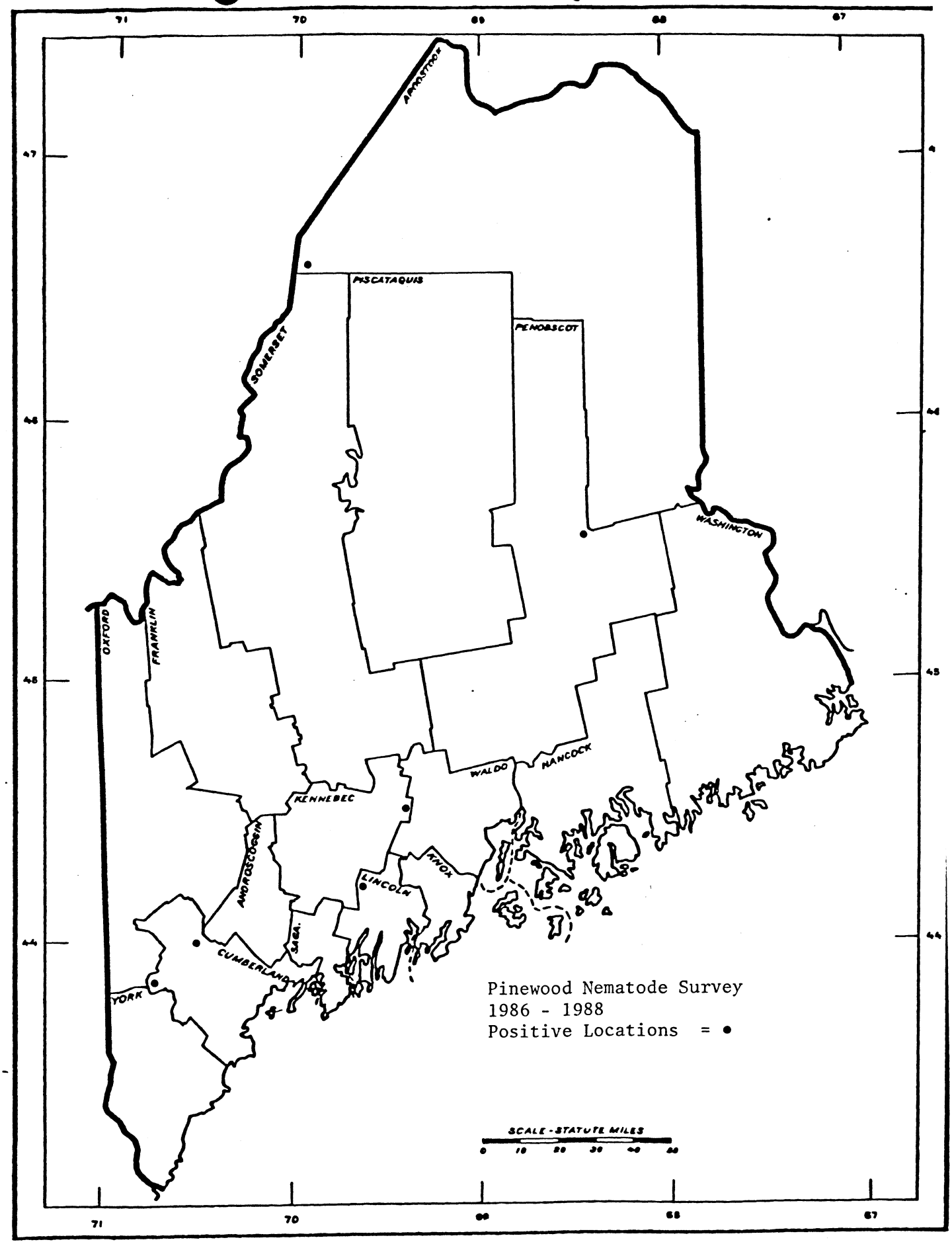
None

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Survey procedures continue throughout the State from a variety of hosts as time permits. Approximately 20 sites surveyed in 1988 with 2 found positive.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None

ADDITIONAL COMMENTS: None

MAINE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45
44
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAGA.
CUMBERLAND
YORK
Pinewood Nematode Survey
1986 - 1988
Positive Locations = ●
SCALE - STATUTE MILES
0 10 20 30 40 50

STATE OF MAINE

1988 **PEST CONDITIONS REPORT WORK SHEET**

PEST (COMMON NAME): Hemlock Woolly Adelgid

(SPECIFIC NAME): Adelges tsugae

HOST: Eastern Hemlock

PRESENT CONDITION:

AREA - TOTAL ACRES: None

LOCATION: No known infestations anywhere in Maine.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

No problem to date. The magnitude of the resource of risk is a function of the extent that the insect might spread. Various scenarios are shown in the attached tables and figures.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

If the current projections from CT are correct, Maine can expect an outbreak in the future. If our winter temperatures are a limiting factor, the the extent of the problem will be reduced.

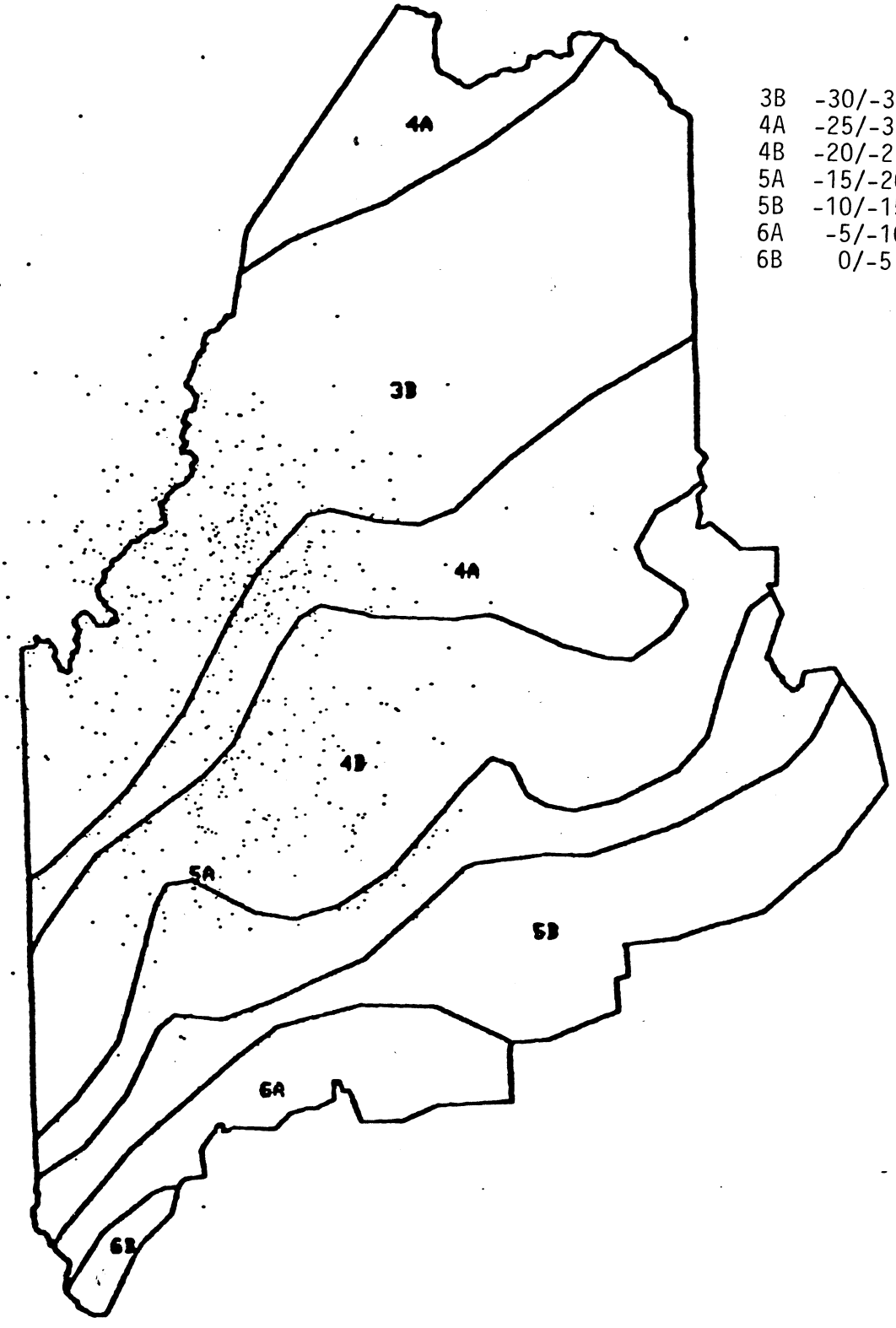
CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

MFS and Me. Dept. of Agriculture have established a quarantine on importation of hemlock products from the infested areas. Survey and detection effort shown on attached map.

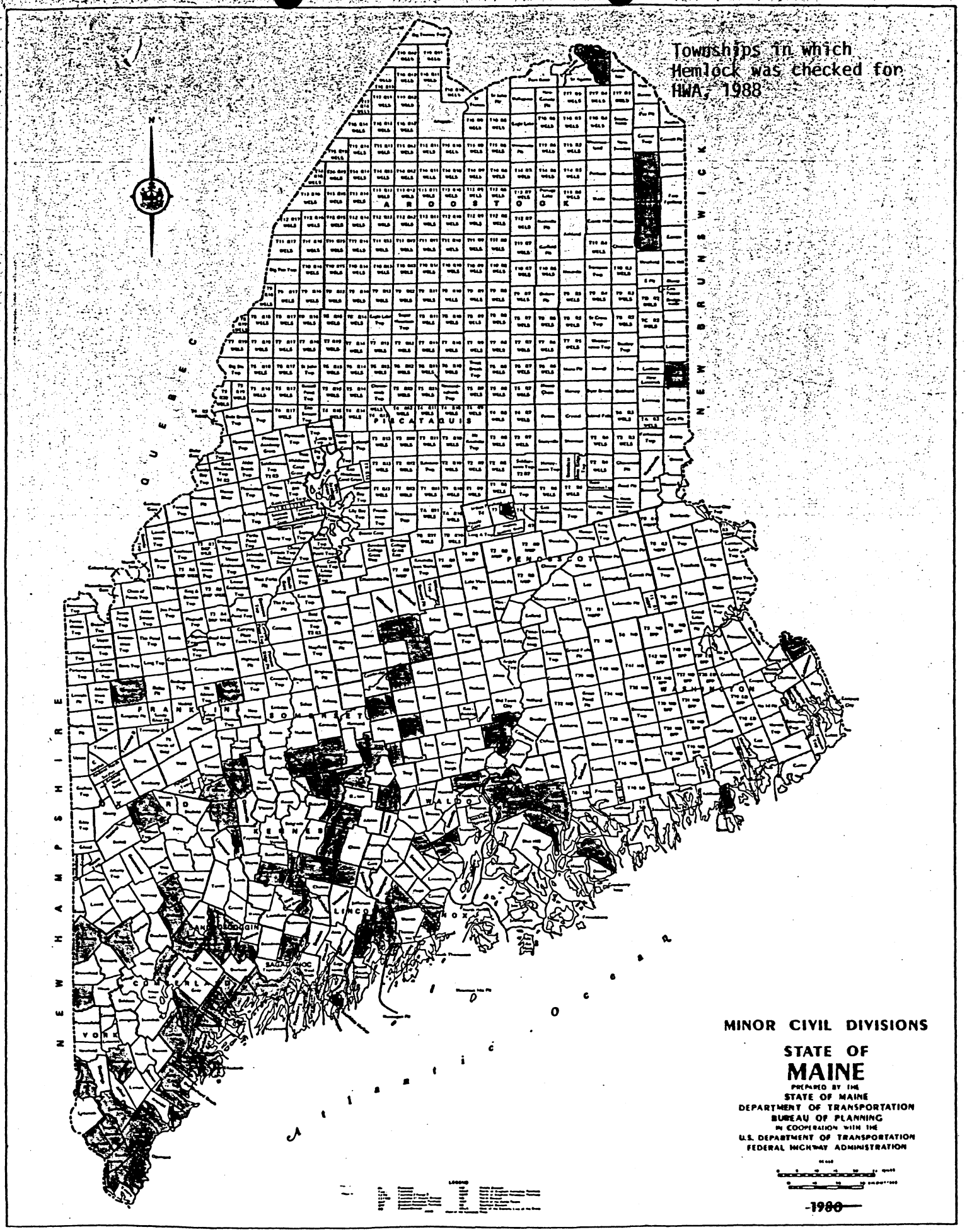
ADDITIONAL COMMENTS:

Relative to HWA, top priority for the northern tier New England States would be a definition of lethal low temperatures/survivability. At the minimum, a rather simplistic evaluation of time and temp. in 5°-10° degree intervals would be well received this year.

ARS Climatic Zones
Average Annual Min Temp (°F)



3B	-30/-35
4A	-25/-30
4B	-20/-25
5A	-15/-20
5B	-10/-15
6A	-5/-10
6B	0/-5


Townships in which Hemlock was checked for HWA, 1988
N
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
PISCATAQUIS
PENOBSCOT
WALDO
LINCOLN
YORK
CUMBERLAND
SAGADAHOC
KNOX
Atlantic Ocean
MINOR CIVIL DIVISIONS
STATE OF
MAINE
PREPARED BY THE
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1980

MAINE'S HEMLOCK RESOURCE

1980's decennial forest survey data, by climatic zones

Zonal Values

Climatic Zone	6B	6A	5B	5A	4B	4A	3B
Comm. forest land (M acres)	67.5	356.1	1218.9	1599.3	3683.1	3631.3	5647.4
Hemlock # trees (M)	1906.2	21009.8	48647	76446.9	198301.5	73707.9	11386.6
Total # trees (M)	57711	330540.5	1335083.2	1616323.9	3416742.1	2664650	4168868.2
%	.03	.06	.04	.05	.06	.03	0
Hemlock vol. (M cu ft)	7044.3	40774.6	182933.5	281035.6	586913.1	277562.8	99027.1
total vol. (M cu ft)	88156.8	538765	1689043.6	2163607.3	5272455.9	5649674.2	9801227.8
%	.08	.08	.11	.13	.11	.05	.01
Hemlock basal area (M sq ft)	438.4	2695.7	11068.2	18530.5	40596.7	18070.7	6344.2
total basal area (M sq ft)	6363.9	37754.2	136953.1	175094.3	409432.3	393808.5	648660.9
%	.07	.07	.08	.11	.1	.05	.01
Hemlock trees/acre	28.24	59	39.91	47.8	53.84	20.3	2.02
total trees/acre	854.98	928.22	1095.32	1010.64	927.68	733.8	738.19
Hemlock vol/acre	104.36	114.5	150.08	175.72	159.35	76.44	17.53
total vol/acre	1306.03	1512.96	1385.71	1352.85	1431.53	1555.83	1735.53
Hemlock ba/acre	6.49	7.57	9.08	11.59	11.02	4.98	1.12
total ba/acre	94.28	106.02	112.36	109.48	111.17	108.45	114.86

Cumulative Values

Climatic Zone	6B	6A+	5B+	5A+	4B+	4A+	3B+
Comm. forest land (M acres)	67.5	423.6	1642.5	3241.8	6924.9	10556.2	16203.6
Hemlock # trees (M)	1906.2	22916	71563	148009.9	346311.4	420019.3	431405.9
Total # trees (M)	57711	388251.5	1723334.7	3339658.6	6756400.7	9421050.7	13589918.9
%	.03	.06	.04	.04	.05	.04	.03
Hemlock vol. (M cu ft)	7044.3	47818.9	230752.4	511788	1098701.1	1376263.9	1475291
total vol. (M cu ft)	88156.8	626921.8	2315965.4	4479572.7	9752028.6	15401702.8	25202930.6
%	.08	.08	.1	.11	.11	.09	.06
Hemlock basal area (M sq ft)	438.4	3134.1	14202.3	32732.8	73329.5	91400.2	97744.4
total basal area (M sq ft)	6363.9	44118.1	181071.2	356165.5	765597.8	1159406.3	1808067.2
%	.07	.07	.08	.09	.1	.08	.05
Hemlock trees/acre	28.24	54.1	43.57	45.66	50.01	39.79	26.62
total trees/acre	854.98	916.55	1049.21	1030.19	975.67	892.47	838.7
Hemlock vol/acre	104.36	112.89	140.49	157.87	158.66	130.37	91.05
total vol/acre	1306.03	1479.99	1410.02	1381.82	1408.26	1459.02	1555.39
Hemlock ba/acre	6.49	7.4	8.65	10.1	10.59	8.66	6.03
total ba/acre	94.28	104.15	110.24	109.87	110.56	109.83	111.58

Adopted 05-1-88

01. DEPARTMENT OF AGRICULTURE, FOOD AND RURAL RESOURCES

001. DEPARTMENT OF AGRICULTURE, DIVISION OF PLANT INDUSTRY

Hemlock Woolly Adelgid Quarantine

SUMMARY: This chapter establishes a quarantine against the introduction of the Hemlock Woolly Adelgid in order to protect Maine's forest, timber and wildlife resources from this destructive pest.

Section I.: Statutory Authority.

The statutory authority for these regulations is 7 M.R.S.A., Chapter 409, Sections 2301-2303.

Section II: Hemlock Woolly Adelgid Exterior Quarantine.

A quarantine is established against the following pest and possible carriers.

A. Pest. Hemlock Woolly Adelgid (Adelges tsugae Annand).

B. Area Under Quarantine. In northeastern United States, the State of Connecticut, the State of Delaware, the State of Maryland, the State of Massachusetts, the State of New Jersey, the State of New York, the State of Pennsylvania, the State of Rhode Island, the State of Virginia and the District of Columbia.

In western United States, the State of Alaska, the State of California, the State of Oregon and the State of Washington.

C. Articles and Commodities Covered. Hemlock seedlings and nursery stock, logs, lumber with bark and chips.

D. Restrictions. All articles and commodities covered are prohibited entry into the State from the area under quarantine unless specified conditions (listed below) are met.

1. Hemlock seedlings and nursery stock are:

admissible into Maine provided each lot is accompanied by a certificate issued by the Department of Agriculture or Conservation of the state of origin with an additional declaration that said material is free from Hemlock Woolly Adelgid.

2. Hemlock logs, lumber with bark and chips are:

admissible provided that said material is only shipped to preapproved sites within Maine. Such shipments must be made under a compliance agreement between the shipper and the Maine Forest Service, Department of Conservation. If said material is shipped to other sites, it must be accompanied by a

certificate issued by the Department of Agriculture or Conservation of the state of origin affirming (a) the material was grown in the state of origin, and that either (b) the material is free from Hemlock Woolly Adelgid, or that (c) the material originated from an uninfested area in the state of origin.

BASIS STATEMENT:

This quarantine was adopted to attempt to prevent the introduction of the Hemlock Woolly Adelgid (Adelges tsugae Annand) into Maine. This pest has been found to cause mortality of Eastern Hemlock (Tsuga canadensis) in infested states. Since hemlock is a major component of Maine's forest on over one million acres, protection of this valuable resource from damage by the Hemlock Woolly Adelgid is essential.

AUTHORITY: 7 M.R.S.A. Chapter 409 § 2301-2303.

EFFECTIVE DATE:

Kennebec Journal Oct 5-88

ilding, Cony Rd., Augusta, Conference Room.
R COMMENTS: November 4, 1988
NTACT PERSON: Clayton F. Davis, Division of tate House Station #28, Augusta, ME 04333. 841.

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nt of Human Services, Bureau l Services

R SUBJECT: Maine Medical Assistance Manual; Health Maintenance Organization.
ULE NUMBER: 88-P332
MMARY UNDERSTANDABLE BY AVERAGE tive for services on or after December 1, 1988 ule establishes services for care from Health rganizations.
UTHORITY: 22 MRSA §42 §3173
RINGS: None scheduled; one may be

R COMMENTS: November 4, 1988
NTACT PERSON: Christine Zukas-Lessard, on of Medicaid Policy and Programs, Depart- Services, State House, Station 11, Augusta, one: 207-289-3957.

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t of Human Services, Bureau

R SUBJECT: Ch. 258. Rules for Control of Notifiable Diseases
LE NUMBER: 88-P333
MARY: These rules amend existing Rules for mmunicable Diseases to reflect changes ublic Law 1987, chapter 811, "An Act to ws Relating to AIDS and Communicable contain other changes intended to modernize gulations in keeping with legal and medical

UTHORITY: 22 MRSA §1012; 5 MRSA

NG: October 27, 1988, 9:00 a.m., State Room #122, Augusta, ME
COMMENTS: November 7, 1988
ACT PERSON: Kathleen Gensheimer, M.D., ogist, Division of Disease Control, Bureau of #11, 157 Capitol St., Augusta, ME 04333. 9-3591.

Department of Environmental Protection, Bureau of Air Quality Control

TYPE OF RULE: AMENDMENT OF EXISTING RULE
ADOPTED RULE NUMBER: 88-333 — 88-337
CHAPTER NUMBER AND TITLE: Ch. 111 — Petroleum Liquid Storage Vapor Control
Ch. 112 — Petroleum Liquids Transfer Vapor Recovery
Ch. 118 — Gasoline Service Stations Vapor Control (New)
Ch. 119 — Motor Vehicle Fuel Volatility Limit (New)
Ch. 120 — Gasoline Tank Truck Tightness Self-Certification (New)
CONCISE SUMMARY: Ch. 111 and Chapter 112 now statewide application of floating roofs and transfer vapor recovery systems for bulk gasoline terminals. Formerly only terminals in the Portland area were subject to this requirement.
Ch. 118 requires that all gasoline service stations which distribute more than 100,000 gallons but less than 250,000 gallons of gasoline per year to install drop tubes which reduce splash filling of the underground tanks. Gasoline service stations which distribute more than 250,000 gallons of gasoline per year must install a vapor balance system which returns gasoline vapors to the gasoline tank truck.
Chapter 119 requires that gasoline distributed in Maine have a Reid Vapor Pressure not to exceed 90 psi during the period of May 1, 1988, through September 15, 1988 and for that period every year thereafter.
Chapter 120 requires that all gasoline tank trucks be maintained leak-tight and be tested and certified annually.
EFFECTIVE DATE: September 21, 1988
AGENCY CONTACT PERSON: Ronald Severance, Department of Environmental Protection, Bureau of Air Quality Control, State House Station 17, Augusta, ME 04333. Phone: 207-289-2437.

Department of Human Services

TYPE OF RULE: AMENDMENT OF EXISTING RULE
ADOPTED RULE NUMBER: 88-340
CHAPTER NUMBER AND TITLE: Ch. 341; Principles of Reimbursement for Boarding Care Facilities on Cost Reimbursement
CONCISE SUMMARY: These rules modify the procedure for establishing residential training rates in boarding care facilities participating in the Title XIX Home and Community Based Waiver Program for the Mentally Retarded. The amendment eliminates the arbitrary ceiling on residential training rates and

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Department of Agriculture, Division of Plant Industry

TYPE OF RULE: ADOPTION OF NEW RULE
ADOPTED RULE NUMBER: 88-347
CHAPTER NUMBER AND TITLE: Ch. 266; Hemlock Woolly Adelgid.
CONCISE SUMMARY: This chapter establishes a quarantine against the introduction of the Hemlock Woolly Adelgid in order to protect Maine's forest, timber and wildlife resources from this destructive pest.
EFFECTIVE DATE: October 1, 1988
AGENCY CONTACT PERSON: Joseph W. Scott, Department of Agriculture, State House Station 28, Augusta, ME 04333. Phone: 289-3891.

Department of Human Services; Health Engineering

TYPE OF RULE: AMENDMENT OF EXISTING RULE
ADOPTED RULE NUMBER: 88-348
CHAPTER NUMBER AND TITLE: Ch. 241; Subsurface Wastewater Disposal Rules Ch. 245; Rules for Site Evaluators of Subsurface Wastewater Disposal Systems
CONCISE SUMMARY: The Department of Human Services has amended the Subsurface Wastewater Disposal Rules to provide several minor clarifications, establish a criteria for the evaluation of filled land, provide detailed specifications for stone used in systems; and provide for the use of peat leaching fields.
The Department has also amended the Site Evaluator Licensing Rules to allow individuals failing one portion of the written exam to take a make-up exam.
Copies of both sets of changes are available from the Department of Human Services, Division of Health Engineering.
EFFECTIVE DATE: October 1, 1988
AGENCY CONTACT PERSON: Russell G. Martin, Department of Human Services, Division of Health Engineering, State House Station 10, Augusta, ME 04333. Phone: 289-5690.

Maine Low-Level Radioactive Waste Authority

TYPE OF RULE: ADOPTION OF NEW RULE

Maine Department of Conservation
Maine Forest Service

Draft 4.28

HEMLOCK WOOLLY ADELGID QUARANTINE
Compliance Agreement

Agreement between the Maine Forest Service and _____ for movement of hemlock logs, pulpwood, and other hemlock parts from states with known infestation of hemlock woolly adelgid (HWA) to preapproved sites in the State of Maine.

1. Objective: To protect the hemlock resource of Maine from the reported threat from HWA while not interrupting delivery of hemlock raw materials to using mills in Maine.

2. Responsibility: As defined by Maine State Law Title 12 ss 8305, the director of the Bureau of Forestry may prohibit, prevent, or regulate the entry into the State of any plants or parts of plants which may cause the introduction or spread of a dangerous forest insect or disease. As defined in Title 7 ss 2301, the Commissioner of Agriculture, when he finds that there exists in another state any dangerous insect infestation, is authorized to promulgate and enforce a quarantine prohibiting or restricting the transportation into or through the State. The Maine Dept of Agriculture and the Maine Forest Service, in cooperation with their counterparts in Vermont and New Hampshire, have determined that HWA constitutes a potential threat to the hemlock resource of the State and the region.

Hemlock woolly adelgid is classed a dangerous forest insect, and transport of uncertified hemlock host material from infested states to unapproved sites in Maine is prohibited. The Maine Forest Service, in cooperation with the Maine Dept of Agriculture, will allow uncertified interstate transport of hemlock logs, pulpwood, and parts to preapproved sites.

3. Agreement: The Maine Forest Service agrees to allow _____ and its wood suppliers to move uncertified hemlock logs, pulpwood, and parts from infested states (see attached map) to the premises located:
_____.

This agreement is to become effective _____ and will be renewed annually until conditions of pest risk are such that continuance of the agreement is inappropriate.

4. Special Requirements:

A. Hemlock logs, pulpwood and parts from these premises will not be moved to another location without approval of a State quarantine inspector and in compliance with the regulatory action prescribed by him, except that free movement between the premises listed herein is allowed.

B. Maine Forest Service representatives may go on _____ premises at any time to check for presence of HWA, but must be accompanied by a representative of _____ for safety reasons.

C. _____ shall undertake sanitary action against any infestation of HWA found on the above premises to the satisfaction of the Maine Forest Service.

Date: _____

XYZ COMPANY	MAINE FOREST SERVICE
_____	_____
Name:	Name:
Title:	Title:

Hemlock Woolly Adelgid
Risk of Artificial Introduction
MFS Evaluation

Successful establishment of HWA following any artificial introduction into Maine will be dependant on suitable host and climate so that the insect can reproduce and maintain a population. Present knowledge indicates that the only host for HWA in Maine is hemlock and suggests that the climate, at least in southern coastal Maine, is suitable for insect establishment.

Other than suitability of the ultimate site, establishment depends on the insect's survival on the transporting agent. The I&DM division of the MFS has assigned an ordinal rating to various transporting agents based on the perceived likelihood of successful transmission of live insects to a suitable host, were these agents to be infested. The liklihood of transmission is very dependant on the length of time that the HWA could survive on such an agent.

This rating scheme does not evaluate the likelihood that any of these agents might or might not be infested, nor does it assess risk based on the number of trips into or through the state by these potential agents.

The rating is shown from lowest to highest potential:

A. Nonhost materials (recreational vehicles, nonhost logs/pulp) carrying HWA 'hitchhikers' passing through the State without stopping.

B. Nonhost materials carrying HWA 'hitchhikers' which stop for an indeterminant time in the State

C. Infested host materials (hemlock logs/pulp with branches attached) passing through the State without stopping.

D. Infested host materials being delivered to and stockpiled in the State.

E. Infested hemlock nursery stock being outplanted in the State.

Regarding possible regulatory actions:

We do not have the capability to readily determine whether goods are infested; and we can not inspect everything that comes out of the infested areas. For these reasons A & B are not considered for regulation.

While we could inspect hemlock branches for signs of infestation we do not have any border checkpoints in place nor do we have the manpower to oversee such an operation as would be required to regulate C.

It is the position of the MFS that, until we have better information with which to evaluate the potential risk, the most appropriate action is to address D & E.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Hardwood Decline

(SPECIFIC NAME):

HOST:

PRESENT CONDITION: See Attached Report

AREA - TOTAL ACRES:

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

PRELIMINARY PHOTOINTERPRETATION RESULTS
WESTERN MAINE DECLINE/MORTALITY SURVEY
1987-88

There is a public perception that forests in eastern North America are suffering increased decline and mortality levels, and that growth rates and general health are reduced from previous levels. Previous studies have reported various patterns which have been ascribed to a number of causes. Many of these studies dealt with specific scenarios and were not representative samples of the overall forest condition.

During 1987, the Maine Forest Service entered into a cooperative project with the US Forest Service to evaluate hardwood crown condition in western Maine. The primary aim of this study was to determine the current levels of crown dieback/decline and tree mortality in hardwood stands in Oxford, Franklin, and Somerset Counties. In assessing the actual amounts of crown and tree mortality these results provide a scientific basis for any discussion of forest productivity, and will serve as an accurate base for any future studies of trends.

This preliminary report serves to outline the aerial and ground survey efforts and summarizes the results of the photointerpretation effort. These results have not been checked for data entry errors, and the values shown are subject to change if such entry errors are discovered.

This project closly resembled a similar study conducted in Vermont during 1985-86 (Kelley, R. S. and B. B. Eav, 1987) and utilized a two-stage aerial photography sampling scheme with subsequent ground checks. The areas evaluated in the Maine study constituted a 1% sample of the land base in the 3-county area.

Candidate photo sample points were selected on a randomly established 7.5 mile grid. At each sample point stereo sets of aerial CIR photos at a nominal 1:8000 scale were taken. Although the random grid placement designated 143 sample points, due to lakes and cloud conditions in certain areas, only 136 photo plots were actually photographed. Plot locations are shown in Map 1.

A 360 acre plot (representing a 1% sample) was defined at the center of the middle photo for each sample point. Each 360 acre plot was divided into 144 2.5 acre cells (12x12 grid) and was evaluated by a trained photointerpreter. Each cell was individually rated and recorded as being in one of the following general categories:

1. Hardwood- all cells where 1/2 or more of cell area is forested and where 3/4 of canopy is hardwoods. This category further stratified into estimated size classes
   - pole timber- crown diameter estimated to be < 11 feet
   - mature timber- crown diameter estimated to be > 11 feet
2. Forested other- all cells where 1/2 or more of the cell area is forested but less than 3/4 of the canopy is hardwood. eg softwood, clearcuts, mixed wood forests
3. Non forest- all cells where less than 1/2 of the cell area is forested.

4. Cloud cover- Those cells where 1/2 or more of the area was obscured by clouds.

The hardwood pole and mature stands were further stratified into one of the following 5 decline categories:

P-1/M-1 = 0 dead/declining crowns per cell
P-2/M-2 = 1 dead/declining crown per cell
P-3/M-3 = 2-4 dead/declining crowns per cell
P-4/M-4 = 5+ dead/ declining crowns per cell
P-5/M-5 = > 10% of crowns in cell dead/ declining

The results of the cell categorization are summarized in Table 1. Cells from each of the hardwood type categories were randomly selected from each candidate photo plot for additional photointerpretation. The level of subsampling for these 'close-count' cells was determined by the overall distribution of the categories using the following weighting:

% HDWD CELLS/CATEGORY	SAMPLING RATE
0-2	100%
2-5	50%
5-10	25%
10-20	10%
20+	5%

The theoretical number of samples was determined as shown below:

Cell Category	P-1	P-2	P-3	P-4	P-5	M-1	M-2	M-3	M-4	M-5	TOTAL
Percent of Hardwood Cells (from Table 1)	15.63	19.34	27.52	2.08	.06	4.17	7.41	21.78	1.97	.02	99.98
Subsample Ratio		.1	.1	.05	.5	1	.5	.25	.05	.5	1	
Subsample # (Theoretical)	125.3	155	110.3	83.5	5	167	148.5	87.3	79	2	962.9

Using the subsample ratios, each photo plot had a proportional number of cells in each hardwood category selected for closer inspection. Because the number of cells sampled on each plot was a function of the within-plot distribution as well as overall distribution, there were some differences between the theoretical and actual sampling intensity. The individual cells used were selected randomly within categories. Each of these cells was closely scrutinized under 4-power stereoscope and in each the number of hardwood crowns in each of the following categories was counted and recorded:

Dieback: crowns showing dead branches in the crown
Decline: more than half of the crown gone
Recent Dead: fine branch structure still remaining

Old Dead: Fine branch structure gone but more than 2 major branches remaining

The results of the 'close count' evaluation are shown in Table 2

During the summer 1988 I&DM technicians visited a subset of the 'close count' cells and collected ground truth data. Site and tree conditions were evaluated for 5 subplots in each of the selected cells. Those plots containing cells from which ground truth data were collected are indicated in Map 1. Actual plot and cell numbers where on-ground data were collected are shown in Table 3.

Although all data from the aerial and ground portions of the survey have all been collected and collated, they have not yet been entered into the computer for analysis. Preliminary observation indicates that, while more damage was discernible from the ground than from the photos, the relative amounts of damage correspond well between the various aerially assigned categories and the on-ground situations. During the winter 1988-89 photointerpretation and ground truth results will be analyzed and compared to determine actual levels of crown damage.

LITERATURE CITED

Kelley, R. S. and B. B. Eav. 1987. Vermont Hardwood Tree Health Survey, 1986. Vermont Dept. Forests, Parks, and Recreation. Waterbury, Vt 05676

TABLE 1. Breakdown of Cell Categories on 136 Photo Plots, Western Maine Hardwood Decline/Mortality Survey, 1987.

	non	other	clouds	P-1	P-2	P-3	P-4	P-5	M-1	M-2	M-3	M-4	M-5	TOTAL
TOTAL	1399	9715	455	1253	1550	2206	167	5	334	594	1746	158	2	19584
percent of total	7.14	49.61	2.32	6.40	7.91	11.26	0.85	0.03	1.71	3.03	8.92	0.81	0.01	100
percent by class		nonhdwd	59.07				pole timber	26.45				mature timber	14.48	

	P-1	P-2	P-3	P-4	P-5	M-1	M-2	M-3	M-4	M-5	TOTAL
subtotal hardwood cells (n)	1253	1550	2206	167	5	334	594	1746	158	2	8015
percent of hardwood cells	15.63	19.34	27.52	2.08	0.06	4.17	7.41	21.78	1.97	0.02	99.98
percent of size class cells	24.18	29.92	42.58	3.22	0.10	11.79	20.96	61.61	5.58	0.07	

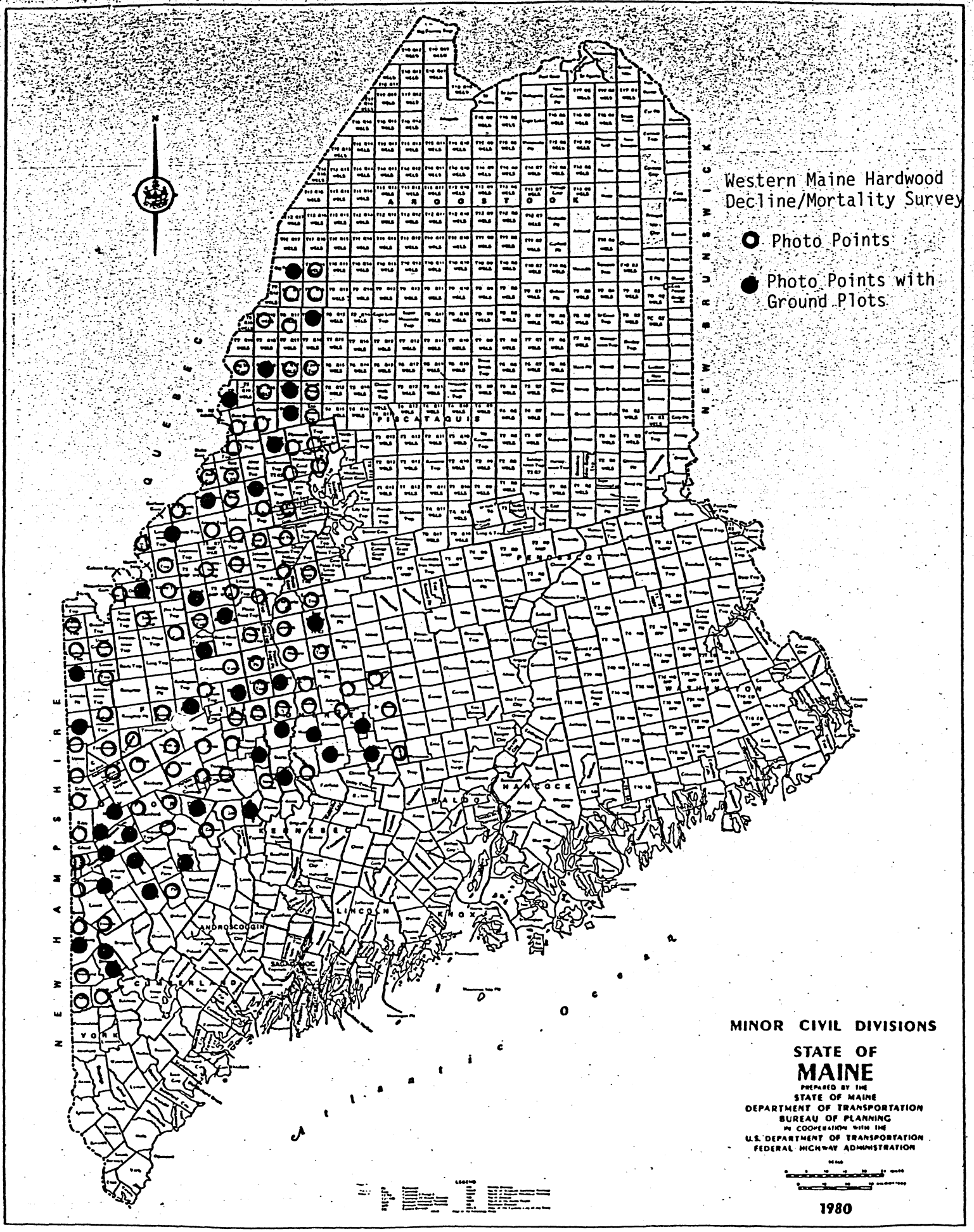
TABLE 2. Preliminary Close Count Results, Western Maine Hardwood Decline/Mortality Survey, 1987

CELL CATEGORY	P-1	P-2	P-3	P-4	P-5	TOTAL P	M-1	M-2	M-3	M-4	M-5	TOTAL M
# CELLS/CATEGORY	148	170	134	72	5	529	155	138	102	70	2	467
MEAN # OF TREES PER CONDITION CLASS PER CELL												
DIEBACK	.24	.51	1.36	2.75	5.60	1.00	.42	.65	1.45	4.33	.50	1.30
DECLINE	.20	.41	.78	1.84	1.00	.64	.10	.40	.65	.90	3.00	.44
NEW DEAD	.05	.18	.28	.31	0.00	.19	.07	.17	.39	.76	.50	.28
OLD DEAD	.04	.11	.25	.68	.60	.21	.04	.06	.23	.56	0.00	.16
TOTAL	.53	1.21	2.67	5.58	7.20	2.04	.63	1.28	2.72	6.54	4.00	2.18

TABLE 3. Plot and Cell Locations from which On-Ground Site and Tree Condition Variables Were Collected, Western Maine Hardwood Decline/Mortality Survey, 1988.

(plot/cell)

P-1	P-2	P-3	P-4	P-5	M-1	M-2	M-3	M-4	M-5
E-14/D-07	A-15/B-09	B-19/B-03	A-16/D-12	C-20/H-05	A-15/K-05	B-20/K-07	B-24/K-07	A-23/L-04	A-23/K-01
E-19/D-09	C-22/K-09	B-24/D-02	C-12/D-10	H-01/I-05	B-20/I-02	B-21/G-06	B-25/J-05	E-12/J-07	E-09/D-09
E-19/L-10	E-16/C-06	C-12/C-04	G-19/F-12	H-05/A-11	B-22/J-01	B-24/G-07	D-10/K-10	G-04/B-03	
G-17/C-08	E-16/D-06	C-22/C-07	H-06/I-07	H-05/B-11	B-22/J-07	H-01/H-07	F-13/H-03	G-04/D-01	
H-17/B-04	E-21/K-09	D-10/J-06	K-16/L-09	I-03/E-06	C-21/E-10	I-13/J-04	G-07/D-05	G-08/I-01	
H-18/A-02	F-05/B-10	E-19/G-09	K-17/D-02		F-15/I-02	I-17/H-02	H-15/B-12	G-08/K-01	
I-13/C-05	G-07/K-07	J-17/J-11	K-17/J-03		F-15/J-03	J-17/K-07	H-15/J-12	J-17/E-01	
	J-17/H-10				I-13/J-03				


Western Maine Hardwood
Decline/Mortality Survey
Photo Points
Photo Points with
Ground Plots
N
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
PISCATAQUIS
PENOBSCOT
WALDO
HANCOCK
LINCOLN
KNOX
ANDROSCOGGIN
SAGADAHOC
CUMBERLAND
YORK
Atlantic Ocean
MINOR CIVIL DIVISIONS
STATE OF
MAINE
PREPARED BY THE
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1980

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): European Larch Canker

(SPECIFIC NAME): (Lachnellula willkommii)

HOST: Eastern Larch

PRESENT CONDITION: State and Federal Quarantine on wood shipments

AREA - TOTAL ACRES: 6,480 (approximate)

LOCATION: Knox, Lincoln, Waldo, and Washington counties, partially

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: At the two epicenters, (Cutler- Jonesboro and Friendship) infection is heavy (stem cankers and more than one canker per branch). Infection light to moderate elsewhere (occasional cankers on branches and generally no stem cankers).

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: No mature tree loss has been observed. Only sapling - pole sized tree mortality. There is another loss involved. That is loss of stumpage sales. Scott and I.P. will not allow suppliers to ship from uninspected sites within the quarantined area.

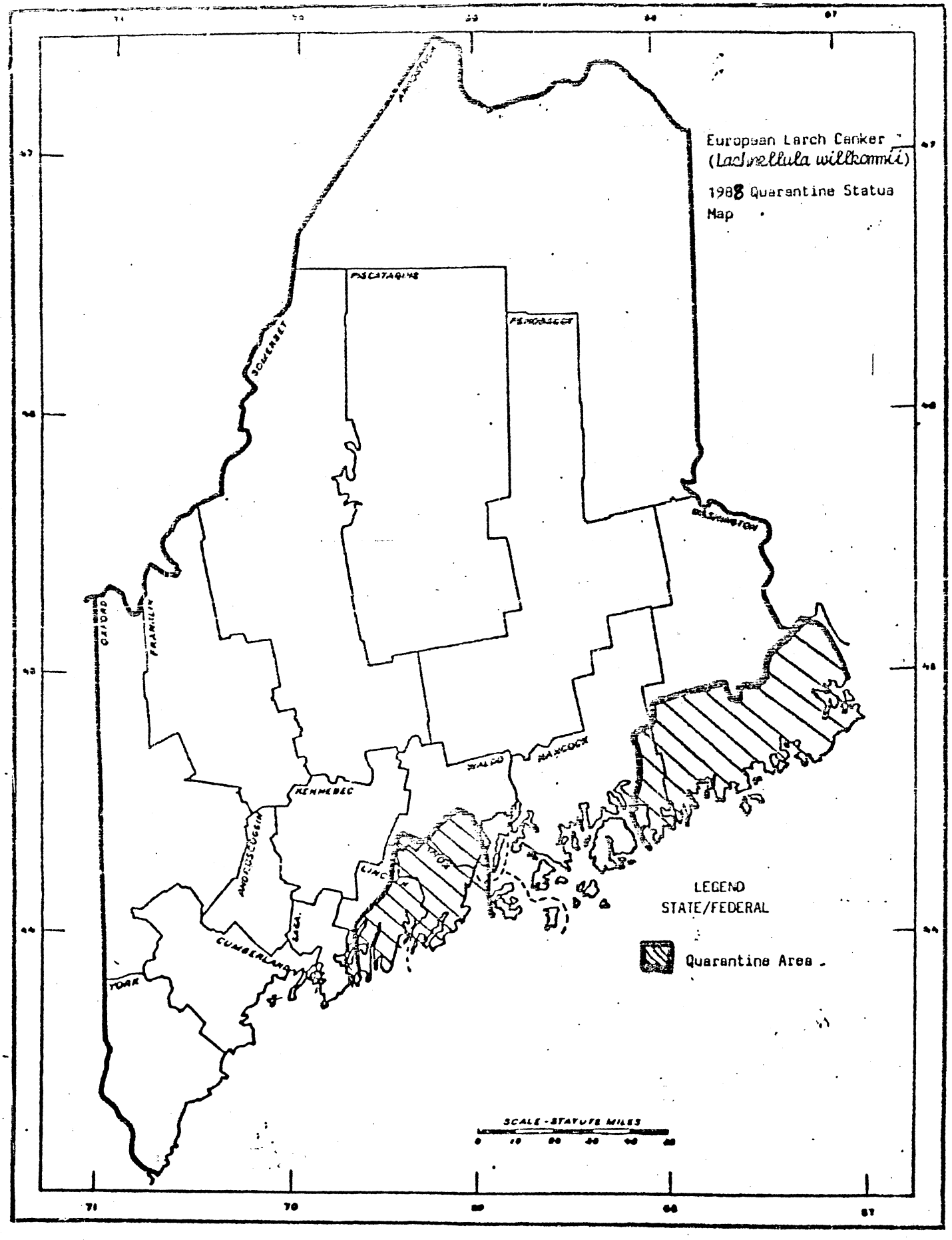
TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: The disease was introduced sometime around 1969 into the area of the two current epicenters. In 18 years it has spread to the currently infested area, (mostly confined to the coast.). A gradual spreading along the coast westward into the Bar Harbor area, and a spread to the east from Camden is anticipated. Trunk cankers on larger trees will degrade them.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: State and Federal quarantines in effect and are being enforced. Compliance agreements allow direct movement of Larch from within the quarantined area to mill sites outside.

ADDITIONAL COMMENTS: Old (3 yrs. old or older) bark is being allowed to be shipped out of 2 mill sites for mulch. Currently only one, (Scott) is doing so. New bark can only be moved from the mill site directly to a hog fuel - utilizing power plant elsewhere within the state, and cannot be diverted for use as landscape mulch.

No new infected townships were located in 1988 surveys. The quarantine boundary thus remains the same as it existed in December, 1986

MAINE


European Larch Canker
(Lachnellula willkommii)
1988 Quarantine Status
Map
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
FRANKLIN
OXFORD
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
LINCOLN
CUMBERLAND
YORK
LEGEND
STATE/FEDERAL
Quarantine Area
SCALE - STATUTE MILES

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Browntail Moth

(SPECIFIC NAME): Euproctis chrysorrhoea

HOST: Willow, Cherry, Roses, Rubus, Oaks

PRESENT CONDITION:

AREA - TOTAL ACRES: 40+ acres known infestation

LOCATION: Casco Bay Islands -- Long, Vail, House & possibly others.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Defoliation light (less than 25%) except on individual trees. Webs common on 40+ acres. Low level infestation could be much larger, possibly even on the mainland.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: No tree mortality noted or expected

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: No specific survey conducted during 1987 or 1988. Populations appear to be increasing, but to date, are still noticeable only on certain off-shore islands. Potential for escape to the mainland if it has not already done so.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None in 1988 Possible visual survey of infested areas in 1989 and some spot clipping of webs in low infested areas.

ADDITIONAL COMMENTS: A few moths were picked up in a light trap operated for MFS in Brunswick. MFS anxiously awaiting formulation of browntail pheremone by APHIS. This would be a very valuable survey tool.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Arborvitae Leaf Miners

(SPECIFIC NAME): Argyresthia thuiella; A. freyella ; A. aureoargentella; & Recurvaria thujaella

HOST: Northern White Cedar -- Thuja occidentalis

PRESENT CONDITION: Endemic statewide except Belgrade in the Central, Macwahoc & Orient in the North and Whiting in the East. Populations appear to be rising.

AREA - TOTAL ACRES: Unknown

LOCATION: Central, Eastern & Northern Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Populations of Arborvitae leafminers appeared to be up generally in central and eastern Maine in 1988. Damage was especially heavy in some Washington & Hancock county sites, and in the Penobscot River valley.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: Not known because adequate data has not been collected. Growth losses are apparently high in many areas although $ figures are unavailable. Arborvitae is currently under utilized.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Increased in certain areas, endemic in others. Populations appear to be increasing.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:
None in 1988, and none planned for 1989

ADDITIONAL COMMENTS: Due to scattered pattern of stands, exact or even approximate acreage estimates are very difficult.

As the species increases in value an increased emphasis must be placed on this pest due to the heavy growth loss and potential mortality.

1987 - 1988 Summary

Arborvitae Leaf Miners, Argyresthia spp. and Recurvaria sp.

Location	# of Live Larvae Per 3" twig*, 1987-1988	# of Live Larvae Per 3" twig*, 1986-1987	Increase Decrease
Palmyra	0.54	0.33	+0.21
Belgrade	4.60	2.66	+1.94
Plymouth	1.81	1.14	+0.67
Cornville	1.19	0.24	+0.95
Newport	1.16	0.33	+0.83
Freedom	0.46	0.22	+0.24
Detroit	1.93	1.21	+0.72
		# of Live Larvae Per 3" twig*, 1985-1986	
Whiting	3.69	1.20	+2.49
Trescott	1.61	1.78	-0.17
Edmunds	2.52	3.37	-0.85
Ludlow	0.32	0.18	+0.14
Moro	1.42	0.87	+0.55
Nashville	0.09	0.35	-0.26
Connor	0.21	0.28	-0.07
T9-R5	0.10	0.16	-0.06
Winterville	0.14	0.10*	+0.04
Orient	2.25	2.66	-0.41
Macwahoc	4.01	3.27	+0.74

* =taken in 1984-85

Dan Pratt

STATE OF MAINE

1988 **PEST CONDITIONS REPORT WORK SHEET**

PEST (COMMON NAME): Gypsy Moth

(SPECIFIC NAME): Lymantria dispar

HOST: Oak, Poplar, Birch

PRESENT CONDITION:

AREA - TOTAL ACRES: 100 acres

LOCATION: T 10 SD (Washington County) map previously sent

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Moderate - 100 acres

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

4% oak ba killed in acres with 1 year heavy defoliation
16% oak ba killed in areas with 2+ years heavy defoliation
losses from previous outbreak stabilized in southern Maine

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations have subsided in relic infestations in eastern Maine. Populations in southern Maine remain at endemic levels. Pheromone and egg mass survey results do not indicate any immediate resurgence of population.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None conducted or planned

ADDITIONAL COMMENTS:

Although pheromone trapping in the generally infested area (racemic traps) endemic populations, there is some concern about the reliability of the results this year. Egg mass survey results presently being compared with moth catch show similar low, stable populations. Some indication of increase in Fryeburg area.

STATE OF MAINE

1988 **PEST CONDITIONS REPORT WORK SHEET**

PEST (COMMON NAME): Oystershell Scale

(SPECIFIC NAME): Lepidosaphes ulmi

HOST: Primarily beech

PRESENT CONDITION:

AREA – TOTAL ACRES: Past damage noticeable on 100+ townships across the central band of the state.

LOCATION: Beech/sugar maple/yellow birch type

SEVERITY – INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

5,000+ acres of previous heavy - severe damage (overstory branch/top dieback, and understory mortality). Stands starting to recover.

LOSSES – INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

See 1987 report.

TREND – CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations appear to be subsiding. No noticeable new scale populations in impact plots established in the original infestations around Brownville. Some new spots noted and fringe but not so intense as previous areas.

CONTROL PROJECTS – METHOD, MATERIAL, ACRES, COST, RESULTS:

None done or contemplated. No known salvage conducted for damaged stands this year.

ADDITIONAL COMMENTS:

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Forest Tent Caterpillar

(SPECIFIC NAME): Malacosoma disstria

HOST: Primarily poplar

PRESENT CONDITION:

AREA - TOTAL ACRES: No known areas of noticeable defoliation in 1988

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Populations generally low - no known areas of defoliation

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

See 1987 report. Radial growth data collected in 1988 has not yet been analyzed.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Populations appear to be increasing. Overall light trap catch has increased 205% from average 18.8/trap to 57.35 trap.

ADDITIONAL COMMENTS:

Although heaviest catches are in southern half of state, the populations are generally increasing throughout. See attached table.

FOREST TENT CATERPILLAR
LIGHT TRAP CATCH
1988 VS 1987

TRAP LOCATION	SEASONAL TRAP CATCH			
	1987	1988	change	% change
Greenbush	88	85	-3	-3%
Clayton Lake	0	0	0	0%
Musquacook	0	4	4	NA
Ste Aurelie	0	10	10	NA
Kingfield	14	24	10	71%
Mount Vernon	59	72	13	22%
Blue Hill	2	16	14	700%
Meddybemps	8	29	21	262%
T17-R4	6	31	25	417%
Millinocket	6	35	29	483%
Washington	124	163	39	31%
Topsfield	6	53	47	783%
Ashland	46	95	49	107%
Jackman	7	76	69	986%
Mattagamon	49	123	74	151%
Brunswick	31	105	74	239%
Allagash	10	93	83	830%
Elliotsville	28	148	120	429%
South Berwick	69	256	187	271%
North Bridgton	207	476	269	130%
TOTAL	376	1147	771	205%

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Sugar Maple Decline/Pear Thrips

(SPECIFIC NAME):

HOST: Sugar Maples

PRESENT CONDITION: No known areas of classic decline symptoms

AREA - TOTAL ACRES:

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

No known areas of unexplained dieback/mortality of appreciable size. Some site related and insect-caused problems have been noted. Although stands across the central band of the state were defoliated by prominent complex, no symptoms can yet be assigned to this factor.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

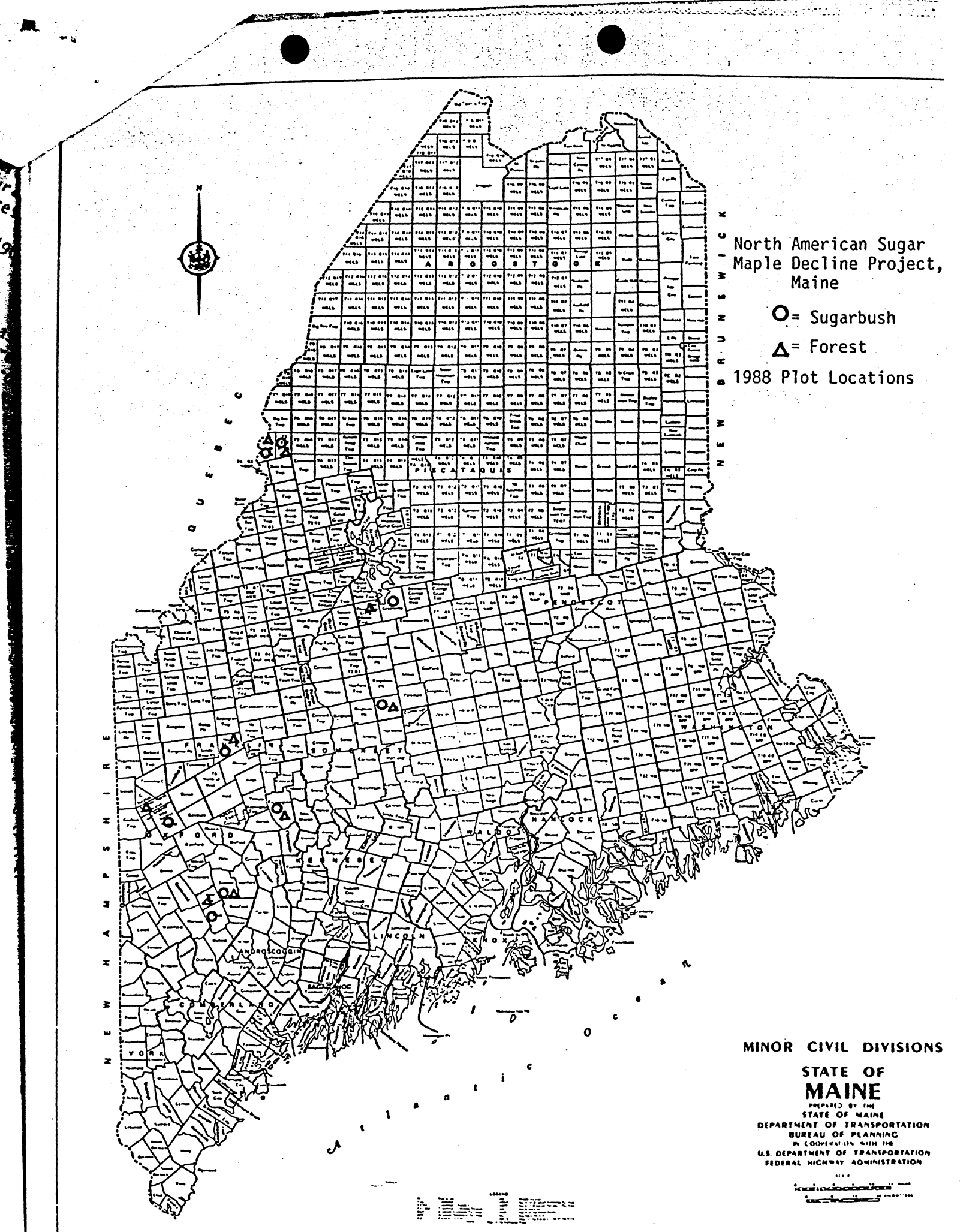
TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

Despite the situation to our west, Maine does not yet have any known damage by pear thrips. We will continue to follow this situation.

MFS presently cooperating with USFS in N. Am. Sugar Maple Decline Project. Memo attached, map of plot locations shown.


North American Sugar Maple Decline Project, Maine
O = Sugarbush
Δ = Forest
1988 Plot Locations
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
ATLANTIC OCEAN
ARROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
KENNEBEC
WASHINGTON
HANCOCK
WALDO
LINCOLN
ANDROSCOGGIN
CUMBERLAND
YORK
MINOR CIVIL DIVISIONS
STATE OF
MAINE
PREPARED BY THE
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FEDERAL HIGHWAY ADMINISTRATION

The estimate of sugar maple tree condition is based on the check plot work (129 maple trees) from 11 plots. The results are shown below. The total data set is to analyzed by the USFS this winter.

SUGAR MAPLE DECLINE PROJECT, MAINE, 1988

comparison of original and check values on check blocks

Average percent of crown affected by condition

	Dieback		Foliar transparency		Discoloration		Dwarfing		Epicormics	
dom/codom										
average condition	5.54	7.20	12.04	14.95	2.58	3.12	.05	.11	.43	.34
subdom										
average condition	7.78	10.28	16.67	21.94	3.33	4.58	.14	.14	.83	.67
all size										
average condition	6.16	8.06	13.33	16.90	2.79	3.53	.1	.12	.54	.43

STATE OF MAINE

1988 **PEST CONDITIONS REPORT WORK SHEET**

PEST (COMMON NAME): Birch Casebearer

(SPECIFIC NAME): Coleophora serratella

HOST: White Birch

PRESENT CONDITION:

AREA - TOTAL ACRES:

LOCATION: Northern 2/3 Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Only scattered spots of noticeable defoliation, all in Northern Aroostook County.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Increased top dieback and tree mortality in old infestations. Mill owners are reporting increased degrade from areas of previous heavy defoliation, primarily upper bole discoloration and rot. Losses not well quantified but are commonly reported as "upper 1/3 of the bole" from hard hit areas around Rangeley Lakes - Birch Casebearer not proven to be the cause.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Statewide population stable - endemic. No appreciable defoliation anticipated for 1989. Some scattered locallized spots of defoliation are possible.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None conducted or anticipated by MFS.

ADDITIONAL COMMENTS:

See birch decline section.

STATE OF MAINE

1988 **PEST CONDITIONS REPORT WORK SHEET**

PEST (COMMON NAME): Birch Dieback/Decline Syndrome

(SPECIFIC NAME):

HOST: White Birch (primarily)

PRESENT CONDITION:

AREA – TOTAL ACRES: 230 M acres

LOCATION: 193 M - Rangeley Lakes
37 M - Coastal Washington Co.
(see map)

SEVERITY – INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Contiguous heavy (51-75%) defoliation in 1983 (Rangeley) or 1985 (Washington County). Scattered defoliation before and after these occurances.

LOSSES – INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

(See Additional Comments)

TREND – CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Original dieback appears stabilized and recovering. This is somewhat masked by increased twig dieback throughout the birch type - apparently caused by recent, climatic factors (esp. e.g. spring drouth).

CONTROL PROJECTS – METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS: Actual figures shwon on attached table.

		Sq. ft. D/Co ba/acre		
		Moribund	Dead	M&D
Rangeley	In	2.7	2.0	4.8
	Out	0.5	2.1	2.7
Washington Co.	In	4.2	4.2	8.4
	Out	0	0.6	0.6

POST-DEFOLIATION WHITE BIRCH STAND CONDITION- SPRING SURVEY RESULTS TO 1988

RANGELEY LAKES AREA
STOCKING ATTRIBUTES

YEAR	Basal Area (sq. Ft.) All Species	White Birch	D/CO-All Species	D/CO-White Birch	Proportion White Birch to Total Basal Area All Size	D/CO
INSIDE						
1985	148	95	104	79	.64	.76
1986	176	114	116	89	.65	.77
1987	170	110	111	86	.65	.77
1988	126	85	87	68	.67	.78
OUTSIDE						
1985	173	96	108	74	.55	.69
1986	190	118	117	85	.62	.73
1987	189	99	123	78	.52	.63
1988	126	81	75	53	.64	.71

WHITE BIRCH CROWN CONDITION ATTRIBUTES

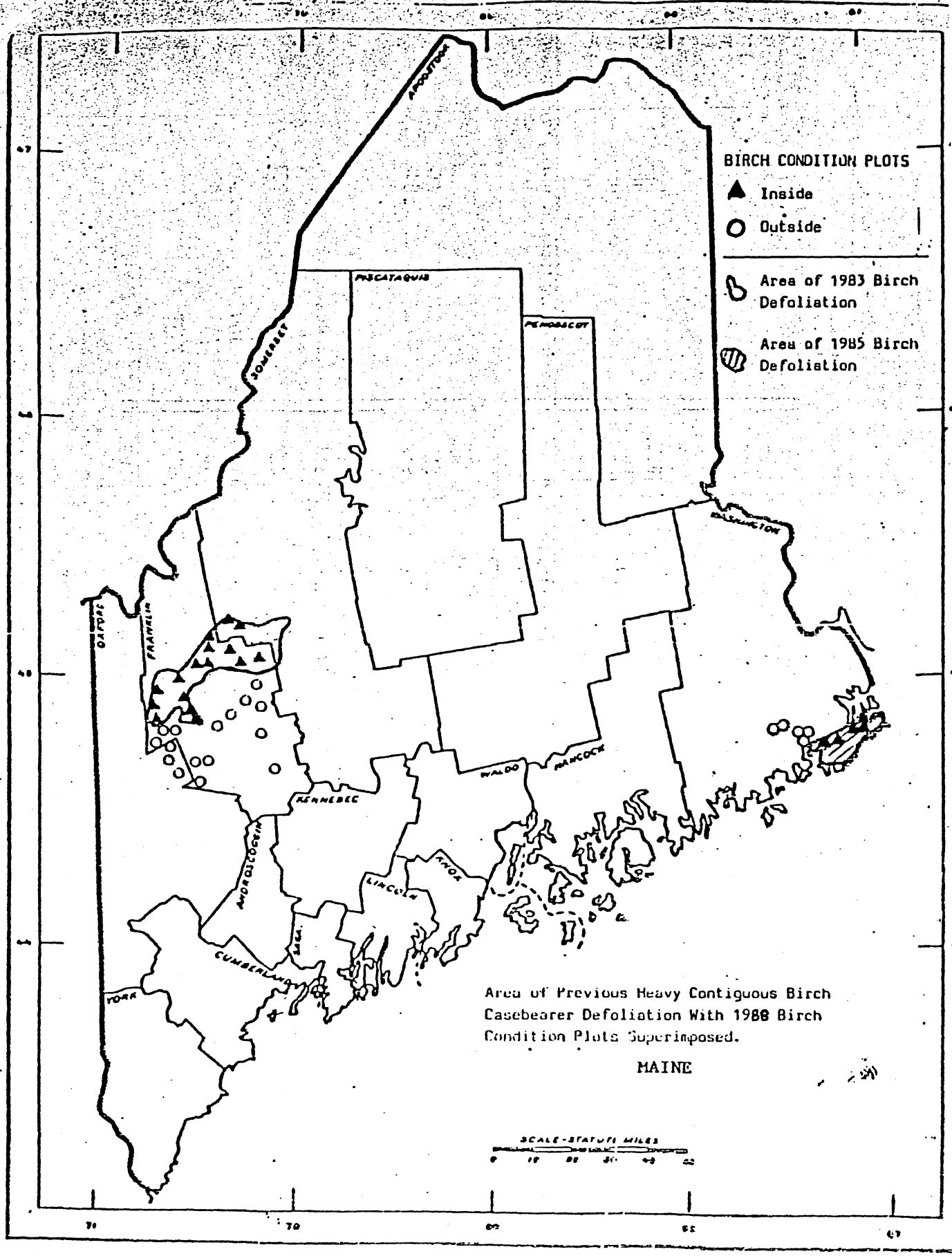
YEAR	Precentage by Class healthy	dieback	moribund	new dead	snag
INSIDE					
1985	70	23	3	1	4
1986	49	44	3	3	.4
1987	63	27	6	1	4
1988	63	30	4	0	3
OUTSIDE					
1985	93	5	.4	.4	1
1986	85	14	.4	.3	1
1987	86	10	1	1	2
1988	76	19	1	0	4

WASHINGTON COUNTY AREA
STOCKING ATTRIBUTES

YEAR	Basal Area (sq. Ft.) All Species	White Birch	D/CO-All Species	D/CO-White Birch	Proportion White Birch to Total Basal Area All Size	D/CO
INSIDE						
1986	138	113	92	79	.82	.86
1987	139	112	109	90	.81	.83
1988	114	88	84	70	.77	.83
OUTSIDE						
1986	148	124	105	90	.84	.86
1987	155	122	103	84	.79	.82
1988	117	91	78	64	.78	.82

WHITE BIRCH CROWN CONDITION ATTRIBUTES

YEAR	Precentage by Class healthy	dieback	moribund	new dead	snag
INSIDE					
1986	65	28	2	4	2
1987	68	22	4	1	5
1988	33	56	6	1	5
OUTSIDE					
1986	94	5	.5	0	.5
1987	98	1	0	.5	0
1988	76	23	0	0	1


BIRCH CONDITION PLOTS
Inside
Outside
Area of 1983 Birch Defoliation
Area of 1985 Birch Defoliation
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
SAGADAHOC
LINCOLN
KNOX
CUMBERLAND
YORK
Area of Previous Heavy Contiguous Birch Casebearer Defoliation With 1988 Birch Condition Plots Superimposed.
MAINE
SCALE - STATUTE MILES

MAINE

19[redacted] PEST CONDITIONS REPORT WORK SH[redacted]T

PEST - (COMMON NAME): *Balsam Fir Needle Rusts*

(SPECIFIC NAME): *Various*

HOST: *Balsam Fir*

PRESENT CONDITION: *Needle rusts were present in most plantations checked in 1988. Damage was most noticeable in plantations which were small in size and broken up by wet runs.*

AREA - TOTAL ACRES: -

LOCATION: *Statewide*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Marketability of smoe trees may be reduced or delayed a year or more.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Not known.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Control of alternate hosts was recommended to several growers.

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Balsam Shootboring Sawfly*

(SPECIFIC NAME): *Pleroneura brunneicornis*

HOST: *Balsam fir*

PRESENT CONDITION: *Heavy populations and damage were reported in 1988.*

AREA - TOTAL ACRES: *Not known*

LOCATION: *Statewide*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:
-

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
-

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Up in 1988 from 1987 levels. Not sure at this time about 1989.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

This problem needs further study to determine its impact on Christmas trees and to develop control strategies and materials.

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Pear Thrips*

(SPECIFIC NAME): *Taeniothrips inconsequens*

HOST: *Sugar Maple*

PRESENT CONDITION: *We have found what appear to be pear thrips in sugar maple buds in western Maine in both 1987 & 1988. Only scatered individuals were found and no damage.*

AREA - TOTAL ACRES:

LOCATION: *Western Maine from the Moosehead area southward.*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Only one area with suspected damage was reported in 1988 but not confirmed

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

None

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Not known but due to the west to east migration of the problem area we will be watching for it more closely in 1989.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Bruce Spanworm, Fall Cankerworm & Spring Cankerworm*

(SPECIFIC NAME) *Operophtera bruceata, Alsophila pometaria, & Paleacrita vernata*

HOST: *Various deciduous hosts*

PRESENT CONDITION: *No defoliation reported for any of the three species.*

AREA - TOTAL ACRES: *0*

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

None

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations expected to remain low for at least 1989

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Saddled Prominent*

(SPECIFIC NAME): *Heterocampa guttivitta*

HOST: *Sugar Maple, etc.*

PRESENT CONDITION: *No defoliation reported in 1988.*

AREA - TOTAL ACRES:

LOCATION: *Southern half of the State monitored.*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

None

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations appear to be static at 1987 levels. Moth catches were about the same as well with some catches higher and some lower but not significantly so.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Maple Leaf Roller*

(SPECIFIC NAME): *Sparganothis sp.*

HOST: *Red Maple*

PRESENT CONDITION:

AREA - TOTAL ACRES: *17,670 acres of moderate to heavy defoliation.*

LOCATION: *Ellsworth area (Hancock Co.)*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Trees noticeably stripped and thin . Refoliation poor.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Red maple is not generally considered a valued crop so any losses would be considered minimal.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations up from barely dtectable in 1987. This pest shows striking ups and downs in population and tends to be spotty. No change in populations or damage is expected in 1989.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Larch Sawfly*

(SPECIFIC NAME): *Pristiphora erichsonii*

HOST: *Larch*

PRESENT CONDITION: *Frequency of reports of larval colonies were up in 1988 from 1987 levels but noticeable defoliation was limited to single trees.*

AREA - TOTAL ACRES:

LOCATION: *Statewide*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:
Scattered single trees affected.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
None

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:
We have seen a slow but steady increase in frequency of sitings over the past 2 to 3 years. We expect the trend to continue upward though slowly probably for at least another year.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

With an increasing emphasis on larch planting, this potentially serious pest should be carefully monitored. Control is usually fairly easy if detection is done early.

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Fall or Late Season Defoliator Complex*

(SPECIFIC NAME): *25 + species (See attached list)*

HOST: *Various hardwoods but especially beech, sugar maple and the birches*

PRESENT CONDITION: *Defoliation was much more severe in 1988 than at any time on record. Larval activities began in early August and continued until leaf drop in early October.*

AREA - TOTAL ACRES: *122,332 acres mapped (see maps) Another 50,000 acres possible just west of the area outline which was not flown.*

LOCATION: *See maps. Mostly central Maine*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Defoliation of mapped areas ran from 75 to 100%. Many additional areas of light to moderate defoliation were detected but not mapped.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations were up strikingly in 1988 from 1987 levels and appeared generally healthy going into the winter.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS:

Predominant species were:

Beech: Variable Oakleaf Caterpillar, Lochmaeus manteo

Sugar Maple: Orangehumped Mapleworm, Symmerista leucitys

Birches: Birch Sawfly, Arge pectoralis

INSECTS WHICH YOU MAY FIND ON NORTHERN HARDWOODS IN AUGUST

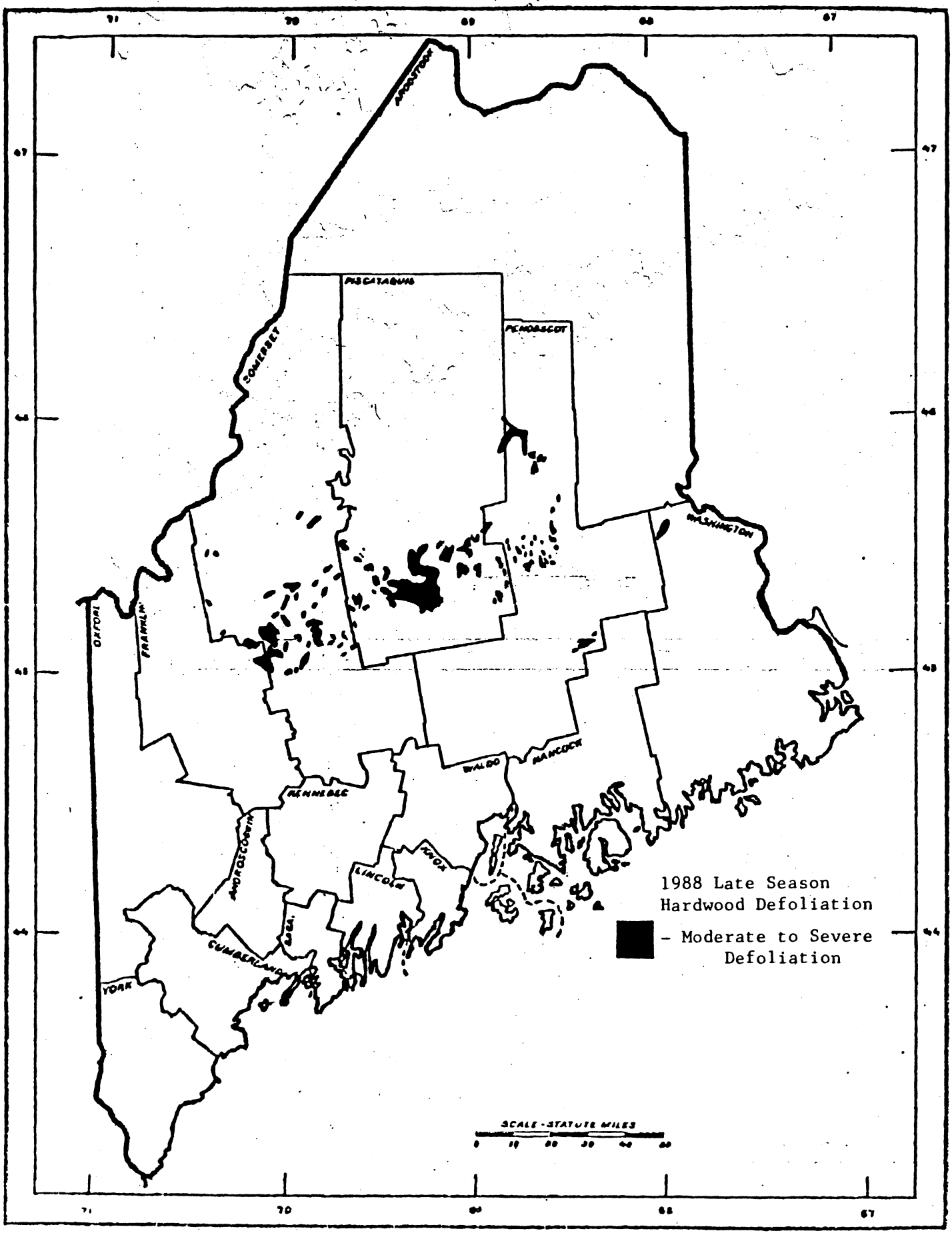
(A partial list)

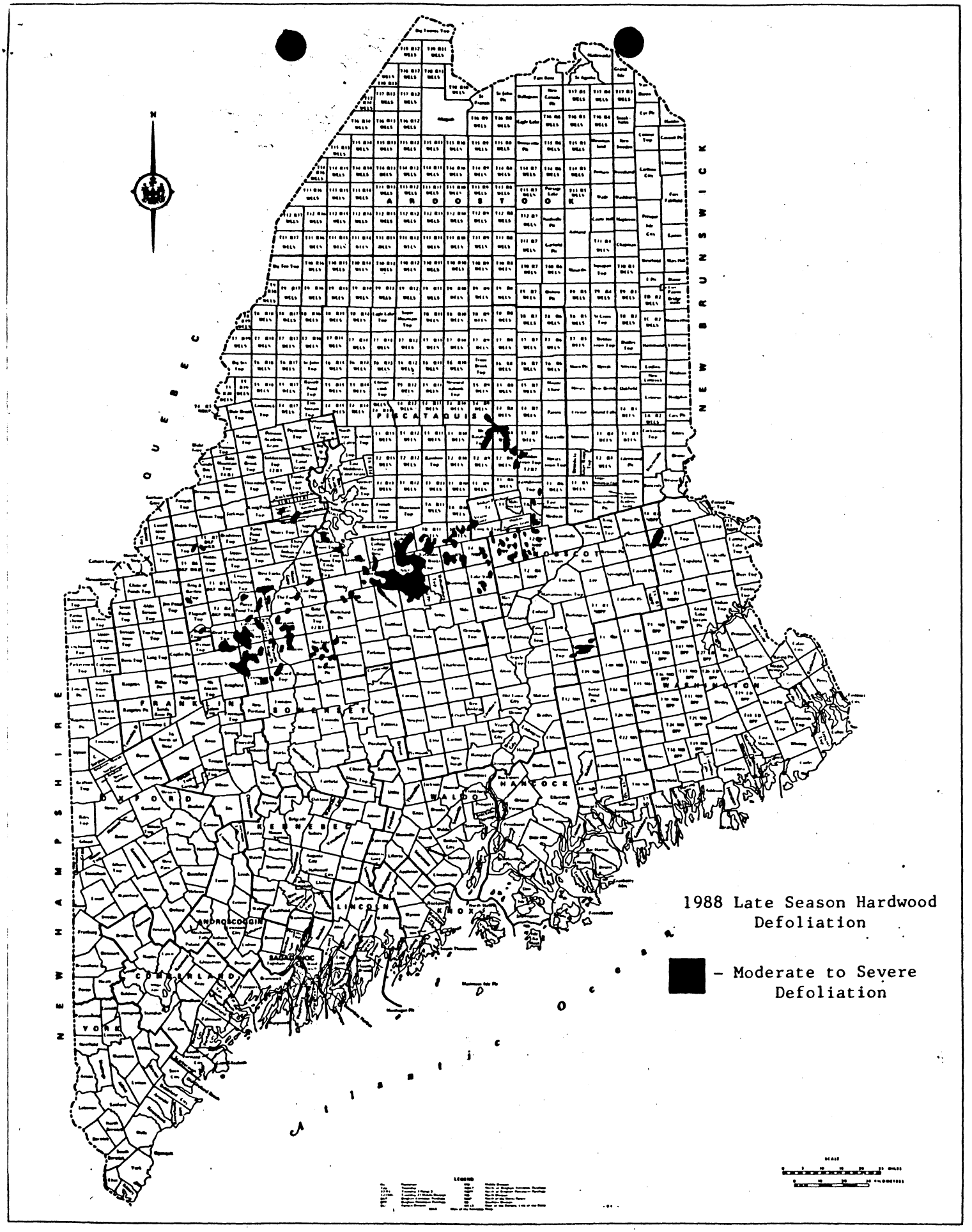
Insect	Comments	Ref. *
1. American Dagger Moth, *Acronicta americana*		108
2. Birch Leaf Folder, ? *Acleris logiana*		82
3. Birch Sawfly, *Arge pectoralis*	The major species	67
4. Birch Sawfly, *Dimorphteryx* sp.	Solitary	66
5. Cleft-headed Spanworm, *Biston betularia cognataria*	Large looper	199
6. Dagger Moth, Acronicta Spp.	Hairy,Cutworm-like	
7. Flat Leaftiers, *Psilocorsis* spp.	Two leaves tied flat	155
8. Hickory Tussock, *Halysidota (=Lophocampa) caryae*		212
9. Lacecapped Caterpillar, *Oligocentria lignicolor*		145
10. Luna Moth ,*Actias luna*		74
11. Orangehumped mapleworm, *Symmerista leucitys*		107
12.Pale Tussock, *Halysidota tessellaris*		76
13. Polyphemus moth, *Antheraea polyphemus*		74
14. Prominent, *Heterocampa biundata*	Early, Notched Head	
15. Prominent, *Het. umbrata*	Rare, Orange Side Patches	
16. Redhumped Oakworm, *Symmerista canicosta*		144
17. Slug Moth Caterpillars	Rare & solitary	
18. Spearmarked Black, *Rheumaptera hastata*	Early Birch Leaf folder	80
19. Sphinx Moths	Hornworms	25
20. Spotted Tussock, *Halysidota (=Lophocampa) maculata*	Common, yellow&black	198
21. Unicorn Caterpillar, *Schizura ipomoeae*		76
22. Unicorn Caterpillar, *S. unicornis*		76
23. Variable Oakleaf Caterpillar, *Lochmaeus (=Heterocampa) manteo*		USFS
24. Webworms, *Tetralopha* spp.	Makes small leaf nests	33 & 117
25. Yellowlined Caterpillar, *Nadata gibbosa*		75
26. Yellownecked Caterpillar, *Datana ministra*	Colonial, black & yellow	72
27. Zebra Caterpillar, ? *Acronicta retardata*	Maple only	

* Unless otherwise noted the references refer to pages in the Hardwood volume of Rose & Lindquist.

AUGUST, 1988

MAINE


AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
1988 Late Season
Hardwood Defoliation
- Moderate to Severe
Defoliation
SCALE - STATUTE MILES


1988 Late Season Hardwood Defoliation
– Moderate to Severe Defoliation
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
ATLANTIC OCEAN
AROOSTOOK
PISCATAQUIS
PENOBSCOT
WASHINGTON
HANCOCK
WALDO
KENNEBEC
SOMERSET
FRANKLIN
OXFORD
LINCOLN
KNOX
ANDROSCOGGIN
CUMBERLAND
YORK

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Spearmarked Black*

(SPECIFIC NAME): *Rheumaptera hastata*

HOST: *Betula spp.*

PRESENT CONDITION: *Defoliation very heavy and noticeable in northern and north central Maine at least locally.*

AREA - TOTAL ACRES: *Not mapped but in the thousands of acres.*

LOCATION: *N. and N.Cent. Me.*

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:
Where populations were found they were most often heavy.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:
This was the first time that this species had been seen in this abundance in Maine by the present staff.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:
This leaf folder elicited many comments from foresters and other woods workers.

MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): *Drought*

(SPECIFIC NAME):

HOST: *Various*

PRESENT CONDITION: *Primarily southwestern and western*

AREA - TOTAL ACRES:

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

Although the drought of 1988 caused a lot of serious damage in other parts of the country, we were spared the brunt the impact in Maine. Conditions early in the season were dry and caused some damage to trees, especially sugar maple, on roadside and drouthy sites in southwestern and western Maine. Rainfall picked up by July and most trees seemed to recover. Some planting programs had to be curtailed especially where bare rootstock was used and some rootlet mortality of large trees was noted. It is possible that the stress on some large trees may cause damage to show up gradually over the next few years especially if compounded by more stress.

STATE OF MAINE

1988 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Beetle

(SPECIFIC NAME): Dendroctonus rufipennis

HOST: White Spruce and occasionally red and black

PRESENT CONDITION: The spread of spruce beetle through budworm damaged white spruce continues and is probably accelerating.

AREA - TOTAL ACRES: Me. has an estimated 3,500 acres of confirmed activity. Several additional areas totalling roughly 1,000 acres include noticeable numbers of infested trees. Scattered trees showing new or old activity are visible throughout much of northern Maine.

LOCATION : NW and NCentr. Me. but predominantly near the Allagash and St. John Rivers. Pockets of spruce beetle have also been found in west central Me.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

$4,500\pm$ acres confirmed

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
Roughly 75 % or more of large (15" + DBH) white spruce have been killed in infested areas. White spruce volumes in these areas range from 10 to 60 % of the stand content. Many areas are being salvaged while others have been considered unsalvageable by the landowners.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:
The size and severity of the infestation is increasing in known areas and suspected new areas are being found with aerial surveys.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:
Salvage cutting is being done where possible and markets are available.

ADDITIONAL COMMENTS:
This problem appears to be very serious and may impact the residual white spruce significantly. The I & DM Div. will be developing a strategy for survey and evaluation over the next year.